JANUARY, 1952 Vol. 41, No. 1

PHILOSOPHY
RELIGION AND
EDUCATION

INDUSTRIAL ARTS and VOCATIONAL EDUCATION

The Shop Teachers' Professional Magazine

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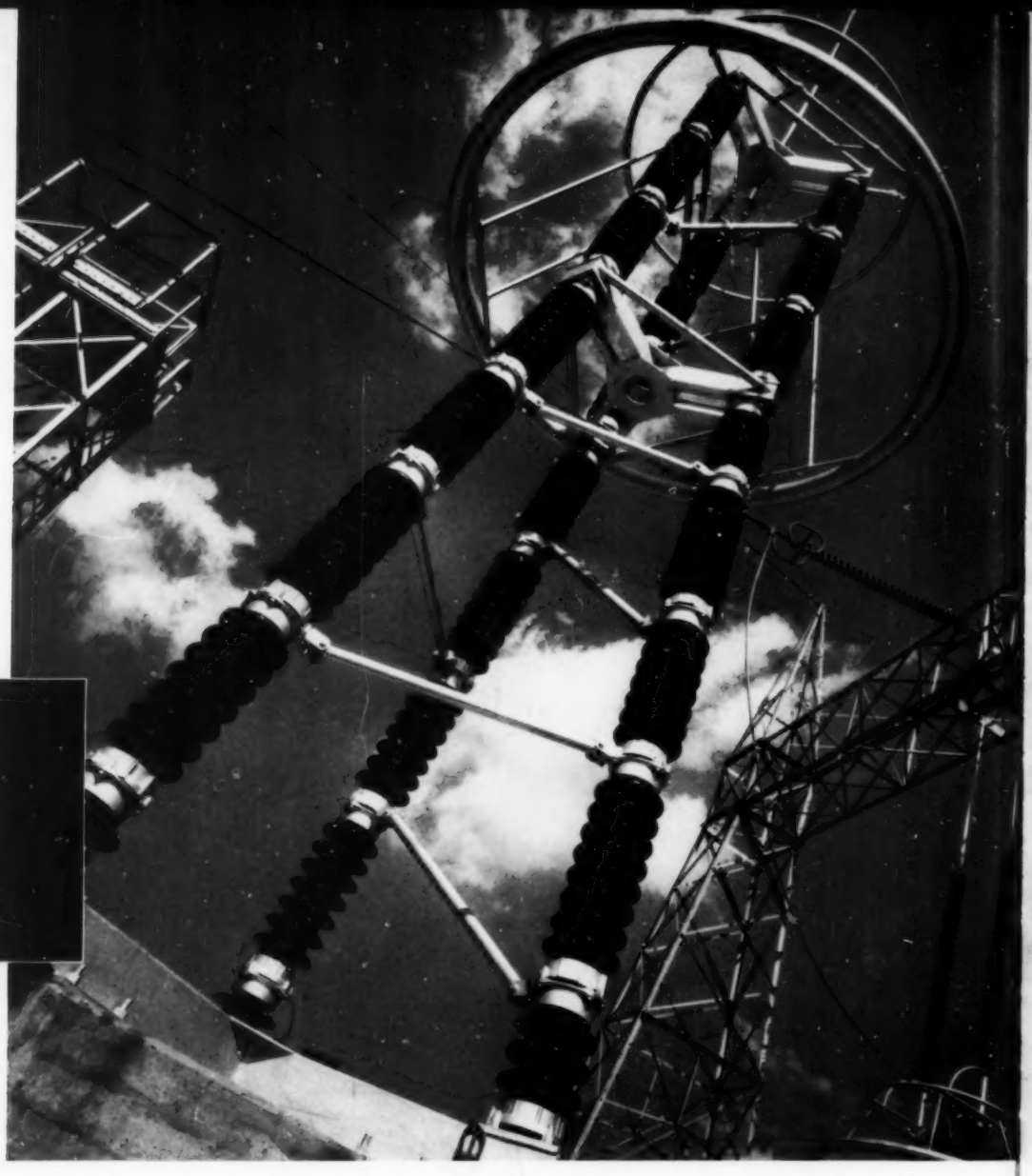
Season's Greetings



Westinghouse Electric Corporation calls this a "traffic cop" for a half-million volts. It is part of the equipment used in the cooperative effort to send more power over existing pathways.

Over Existing Pathways

Engineers of ten great companies have been working to double the capacity of existing long distance electrical conductors . . . 500,000 volts instead of a previous 287,000 maximum. The problem is to prevent the dissipation and loss of power to the atmosphere along the way. Bigger lines cannot be employed; their cost is prohibitive. Present pathways must be used. If these engineers succeed, they will make more power available to more communities; and the power geography of this country and the pattern of living for millions of people will be improved.

In the field of human endeavor, much of the energy every human being generates is dissipated and lost along the way, in unintended, useless, contradictory and ofttimes harmful activities. If more youngsters in our schools are to achieve what they are capable of in adult life, this power must be saved and led into useful channels . . . and the geography of their lives will be changed. Again, present pathways must be used. New nerve systems cannot be built. Unlike the field of electricity, the remedy can be applied only from within. But the educator can help, *must* help . . . to establish within the individual sounder goals, to create within him a hunger to reach those goals, to initiate a habit of prompt and decisive action toward those goals, to set stumbling feet more firmly on the path. Then all else will follow as a matter of course. Existing pathways for energy will be *enough*.

So the instructor in mechanical drafting seeks to increase the interest that first brings the student to class. He will show the very great human satisfactions that lie in achievement . . . and the special and honorable achievements toward which drafting leads. By the emphasis he uses and the respect he himself holds for fine, loving and careful craftsmanship, he will lead the students' impulses into the same channels. He will show how near steps lead to far. . . . And he will never permit any contradiction of his attitude by a careless regard for the drafting instruments his boys use in the work. For here, in fine instruments, placed in the youngsters' hands is magic of the sort he seeks. His choice must be: *the best*.

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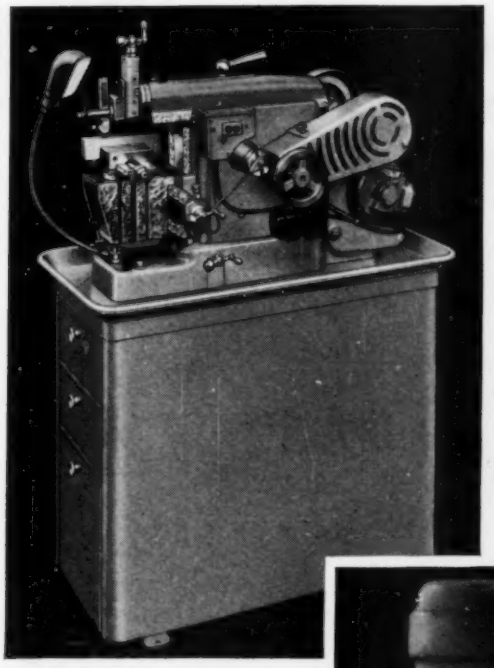
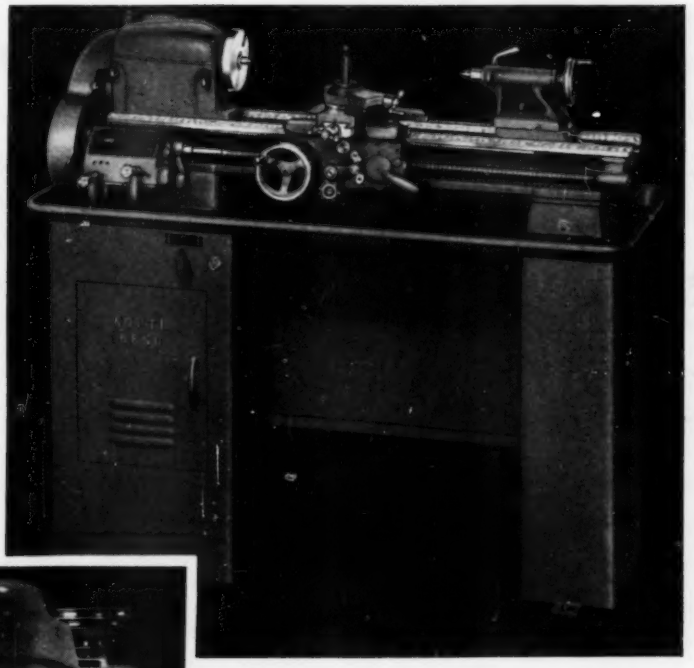
TOP 3 FOR SCHOOL SHOPS





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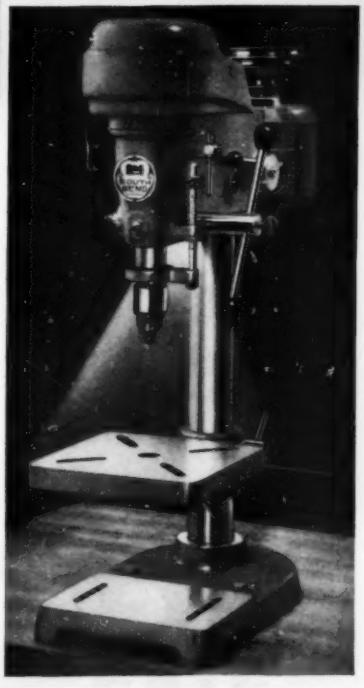

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Vol. 41 No. 1

JANUARY, 1952

INDUSTRIAL ARTS *and* VOCATIONAL EDUCATION

THE SHOP TEACHERS' PROFESSIONAL MAGAZINE

Published on the 15th of month preceding date of issue

THE BRUCE PUBLISHING COMPANY, 400 North Broadway, Milwaukee 1, Wis. • CENTRAL OFFICE: 20 North Wacker Drive, Chicago 6, Ill. • EASTERN OFFICE: 225 Broadway, New York 7, N. Y.

This Month's Cover

The picture chosen for the January, 1952, cover of INDUSTRIAL ARTS AND VOCATIONAL EDUCATION shows a student cutting threads in one of the machine shops at the Milwaukee Vocational and Adult Schools. The photograph was submitted by Stanley O. Opsahl, instructor of photography.

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Editorial Contributions. — The Editor invites contributions bearing upon Industrial Arts, Vocational Education, and related subjects. Manuscripts, drawings, projects, news, etc., should be sent to the Publication Office in Milwaukee. Contributions are paid for upon publication. In all cases manuscripts should be accompanied by full return postage.

Articles Indexed. — The articles contained in the Magazine are regularly indexed in "The Readers' Guide to Periodical Literature," and "Education Index."

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New Books for the New Year

☆ ☆

1. **AUTOMOTIVE MAINTENANCE AND TROUBLE SHOOTING: Frazee-Bedell**
Logical trouble-shooting procedures that quickly eliminate as many units or systems as possible from consideration.
Pub. Date Jan. 1, 1952

2. **RIGHTS OF THE AMERICAN WORKER: John A. McCarthy**
Every student and trainee should be thoroughly familiar with his legal rights and benefits as an American worker.
Pub. Date Jan. 1, 1952

3. **SMALL COMMUTATOR MOTORS: Kennard Graham**
A companion book to *Small Non-Commutator Motors* published earlier this year.Covers operation, maintenance, and repair.
Pub. Date Jan. 1, 1952

4. **ELECTRIC ARC WELDING: John B. Austin**
A great advance in the preparation of "teachable" materials for instruction in modern arc welding.
Pub. Date Jan. 1, 1952

5. **METAL WORK FOR INDUSTRIAL ARTS SHOPS: Barich-Smith**
Stimulates students' interest in developing craftsmanship; develops an appreciation of good design; and outlines the occupational opportunities.
Pub. Date Jan. 1, 1952

6. **FORGING AND METAL FORMING: S. E. Rusinoff**
The author's intimate knowledge of practical industrial practices and his proven ability to transmit such information to his readers, assures that this book will readily be selected for all training programs.
Pub. Date Jan. 1, 1952

7. **RELATED MATHEMATICS FOR CARPENTERS: L. S. Chamberlain**
Reviews those arithmetic fundamentals required and directly relates them to everyday problems encountered by the carpenter.
Pub. Date Jan. 1, 1952

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ASSOCIATION NEWS

EPSILON PI TAU, THETA CHAPTER INITIATION

Twenty-one new members were initiated into Theta Chapter, Epsilon Pi Tau, at the formal initiation held Saturday morning, October 6, 1951, at The Stout Institute, Menomonie, Wis. After the ceremony the new members and the initiation team were photographed, after which a banquet for all members was held at the Marion Hotel.

The new members of the Theta Chapter had been given a strenuous oral examination on Wednesday evening, October 3. Dean Clyde A. Bowman announced the results of the examination Saturday morning at 10, and at 10:30 the new members were formally initiated. The members of the initiation team were Earl R. Herring, Philip Ruehl, George Stephenson, William Jokkel, Robert Swanson, H. Richard Smock, Robert J. Berg, and Dean Clyde A. Bowman.

The new members are James Andersen, DeForest Bergvall, Lawrence Bohn, Wayne Coleman, John Fryklund, Curtis Gehling, Marvin Krueger, Ken Lantto, Lorin Larson, Joe Luetkemeyer, Raymond Luhrsen, Jack Luy, John Mahoney, Walter Parsek, Jack Rupert, Albert Spanheimer, Robert Spinti, Robert Vilmann, John Wenstadt, Cliff Westphal, James Zeasman.

After the dinner, Earl Herring, president of the Theta Chapter, welcomed the new members and the visiting members. Then he introduced Burton E. Nelson, former president of The Stout Institute, who stated in his speech that the happiest years of his life were spent in teaching.

Ray A. Wigen, director of Graduate Studies, The Stout Institute, delivered an address to the group on "The Implications of the Graduate Program." Mr. Wigen stressed the fact that educational problems are becoming more complicated, and that it is necessary that students begin to realize the necessity of pursuing graduate study.

WISCONSIN INDUSTRIAL ARTS AND VOCATIONAL EDUCATION MEETINGS

The Wisconsin Industrial Arts Association held its annual meeting at the Public Museum Lecture Hall at Milwaukee, Wis., at 2:00 p.m., on Thursday, November 1, 1951.

Bernhard Hagen, president of the association, acted as chairman.

Judge Donald W. Gleason, Green Bay, spoke on "Industrial Arts Has Power to Combat Delinquency."

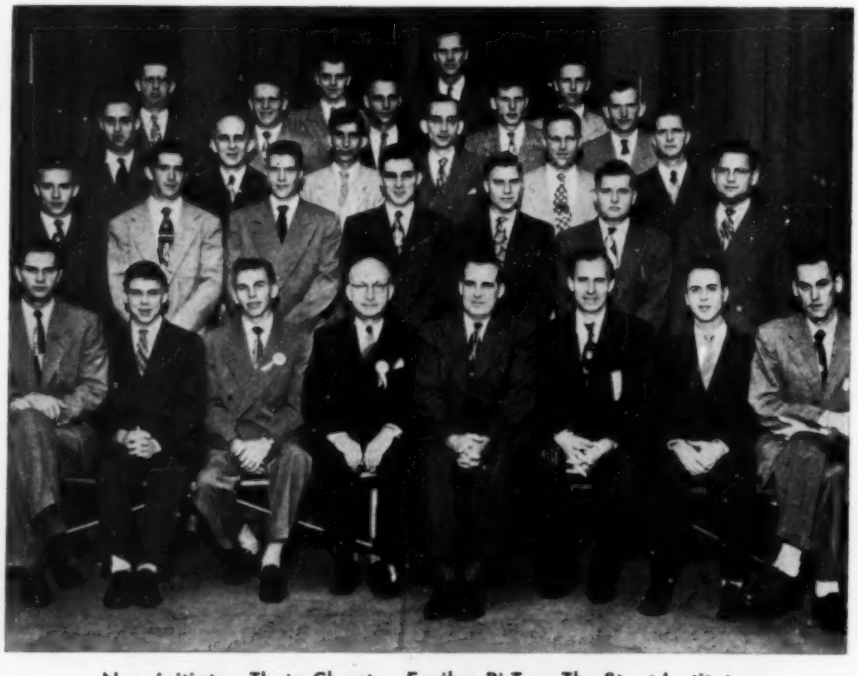
The judge mentioned the lack of having some good activity to engage in as the basic cause of the present wave of juvenile delinquency. Industrial arts presents many opportunities for worthwhile hobbies and activities which will keep the young occupied so that they will not acquire bad habits.

He also advised parents not to drive their children from home but rather that they make pals out of their sons and join with them in wholesome activities that will keep them usefully and interestingly occupied, teach them good manners, courteous behavior, and respect for religion.

Harry A. Pederson, head of the industrial-education division, State Teachers College, Platteville, Wis., was elected president for the coming year, and Leo Jenkins of La Crosse, committee man at large.

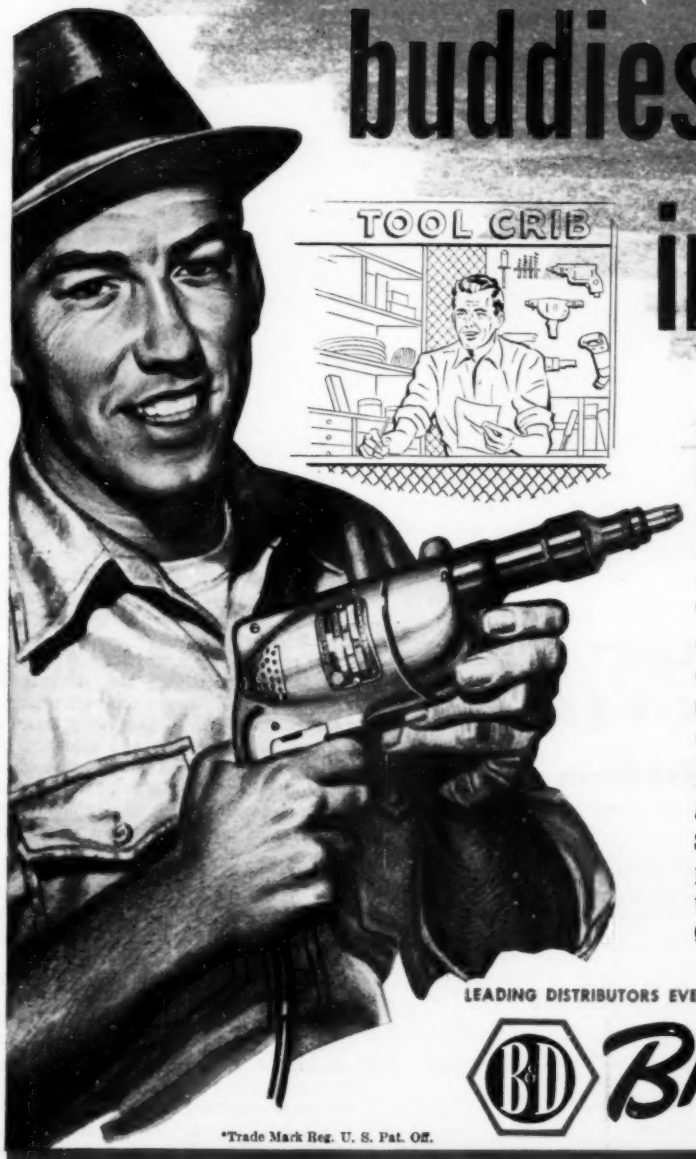
The association presented a gift to Harlan Shufelt as a mark of appreciation of his past services as secretary.

(Continued on page 6A)



New initiates, Theta Chapter, Epsilon Pi Tau, The Stout Institute, Menomonie, Wis.

"We were buddies back in school"



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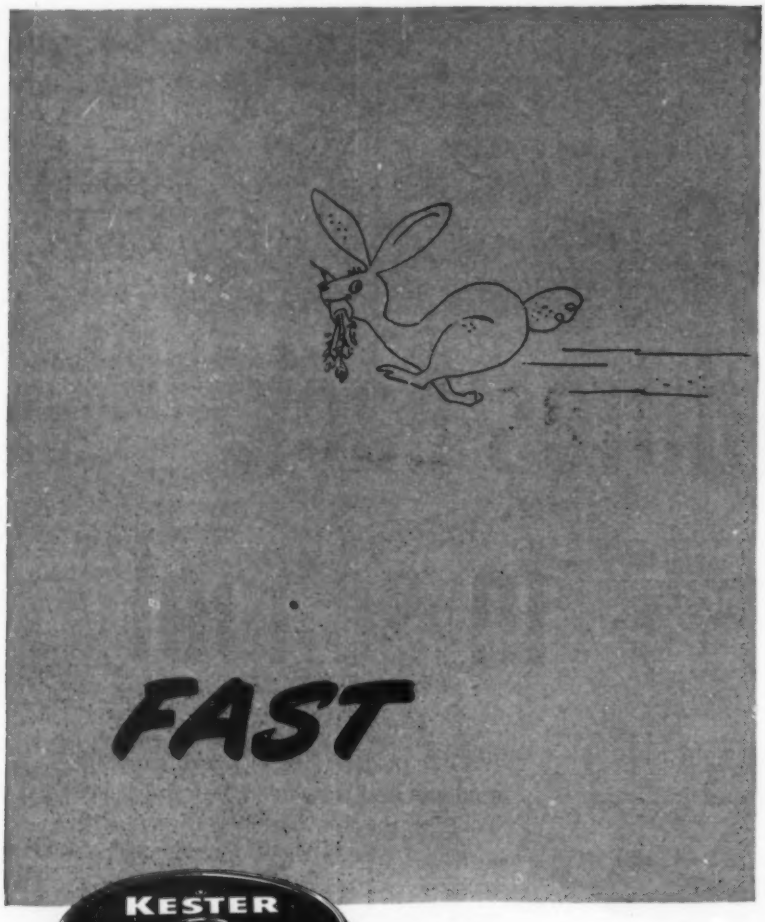

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Two Free Manuals: One for the instructor and a modified version for the student.

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ASSOCIATION NEWS

(Continued from page 4A)

Harold A. Schulz and Ken Pederson were the cochairmen of the annual Stout Epsilon Pi Tau breakfast, held at 7:00 Friday morning. There was a fine attendance in spite of the early hour, a good program, excellent prizes, and many interesting reminiscences as old friends met.

The members of the Wisconsin Vocational and Adult Education Association held a luncheon meeting in the Schroeder Hotel, Empire Room, on Thursday, November 1, 1951.

John Te Poorten, Madison, Wis., was chairman on this occasion.

Earl S. Johnson, associate professor of the social sciences, University of Chicago, was the speaker, and his subject was "The Risk of Being Intelligent."

MISSISSIPPI VALLEY INDUSTRIAL ARTS CONFERENCE

The 38th meeting of the Industrial Arts Conference was held at Hotel LaSalle, Chicago, Ill., on November 8, 9, and 10, 1951.

The Thursday morning conference with Verne C. Fryklund as general chairman, opened at 9:30 a.m. F. J. Schmidt, Jr., State Teachers College, Muncie, Ind., was chairman of the session.

The topic of discussion was "Evaluation of Instruction in Industrial Arts." Assisting the chairman of the session were: Wayne Wetzel, State Teachers College, Macomb, Ill.; and N. A. Hauer, Louisiana State University, Baton Rouge, La.

The gist of the presentation and discussion was, that, while better selection of candidates for teacher training institutions was to be aimed at, nevertheless, the colleges have no choice since state institutions must take all comers. Then, too, while we can gather all the data about the students, we have not fully learned how to analyze it or interpret it.

The conclusions drawn were: discover suitable candidates by studying the students in high school. Try to influence the better kind to become teachers. Give those who enter training the best of instruction, and guidance, and test for teaching ability and capacity throughout their school attendance, trying at all times to instill the proper personality traits and behavior habits.

The acting general chairman at the afternoon meeting was Clyde A. Bowman, dean of The Stout Institute, while DeWitt Hunt of the Oklahoma A. & M. College, was the chairman of the session. Ammon Swope, Purdue University, and W. C. Bicknell, Southern Illinois University, assisted in developing the discussion subject, "Meeting the Needs of Industrial Arts Teachers in Graduate Programs."

The discussions touched upon: upgrading by in-service training, part-time and summer session attendance, off-campus instructional programs, graduate credit for school-shop work, workshops, extension programs, etc.

Advanced degrees for industrial-arts teachers also were discussed, and such questions as "Who should study for these advanced degrees? Where to go for graduate studies? Where are abstracts for master's and doctoral dissertations obtainable? and How much work is required for each of the advanced degrees?" called for lengthy discussion.

At the Friday morning session L. V. Newkirk, Chicago, was the chairman. He was assisted by

(Continued on page 9A)

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Rabbeting Capacity
8-inch width, ½-inch depth
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- Cutterhead rotating at 4100 rpm gives 16,400 cuts per minute
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Compare these quality jointers with all others—You'll see why they are Industry's First Choice

DELTA 6-Inch JOINTER

Rabbeting Capacity
6-inch width, ½-inch depth

- 3-knife solid tool-steel cutterhead mounted on sealed lubricated-for-life ball bearings. Shaft and cutterhead are integral unit
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- Fence
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ASSOCIATION NEWS

(Continued from page 6A)

M. E. Franklin, Tahlequah, Okla., and N. B. Grinstead, Warrensburg, Mo. The subject for discussion was "Industrial Arts in the Elementary School," i.e., in classes below grades 6 or 7.

Dr. Newkirk stated that the objectives of this work is the same as for any other industrial-arts work except that the materials, projects, and tools had to be chosen for the age level of the pupils; that the work in these grades should be integrated with the other subjects taken by these youngsters, and that it should be taught by the regular teacher in the classroom, who of course, should have special training for this work. He also stated that in Cleveland and Chicago the industrial-arts work in the fourth, fifth, and sixth grades be given to both boys and girls in separate activity rooms.

Mr. Grinstead discussed the industrial-arts work in the rural schools, where there are still too many one-room schools with teachers that are overloaded as it is, and have had no special training for this work.

Mr. Franklin stated that the teachers in these lower grades should have a broad experience working with a variety of materials that are interesting to children. Care should be taken in these classes that adult interests are not imposed upon the imaginative but unskilled youngsters.

At the Friday afternoon session Professor A. B. Mays was general chairman and Fred G. Strickler, Bradley University, Peoria, Ill., was the session chairman. The latter was assisted by W. D. Stoner, Oxford, Ohio, and J. L. Feirer, Kalamazoo, Mich.

Their subject was "Research in Industrial Arts."

All of the speakers presented evidence of much study of research projects made within the past few years, and their presentation of the subject matter called forth a lively discussion.

On Saturday morning Professor Mays was the acting general chairman.

The theme chosen for this meeting was "A National Professional Organization for Industrial Arts Teachers." T. A. Hippaka, Ames, Iowa, was the chairman, and H. L. Oakley, Murray, Ky., and D. F. Barich, Dearborn, Mich., assisted him.

Mr. Oakley stated that we could learn much by studying such countries as Switzerland and Sweden in really selling education to the people of our country.

The value of the dollar is only half of what it was and the schools get but a small part of the tax dollar and that is grudgingly given. Teachers and their educational organizations ought to get together and sell their movement to the people.

Dewey Barich, in the same vein, warned against dividing our efforts by having too many organizations that work at cross purposes. He expressed the opinion that industrial-arts teachers should affiliate with the N.E.A., as well as with the A.V.A., so that we can best serve American youth. He stated that there are no professional problems that cannot be solved by the democratic processes.

Tom Hippaka's remarks can be boiled down to (*a*) fuller and better preparation for industrial-arts teachers; (*b*) better articulation of effort between industrial arts, general education, and vocational education to help our youth to grow up as real Americans — sound physically, mentally, spiritually, socially, emotionally, economically, and vocationally.

At the business meeting it was decided that the 1952 meeting should be held on November 13, 14, and 15, at the LaSalle Hotel, Chicago, Ill.

Harry Jackson, State Teachers College, Winona, Minn.; and M. F. Poyzer, University of North Dakota, Grand Forks, N. Dak., were admitted to membership.

♦ The 1951–52 officers of the Missouri Industrial Education Association are:

Otho L. Barnett, Missouri State Teachers College, president; Alfred L. Mack, Hadley Technical High School, St. Louis, vice-president; and Stewart Sherard, John Martinez, R. T. Coles, Anna O'Brien, and Ralph Wilkinson, members of the board of directors.

♦ During the school year 1951–52 the schedule of meetings of the Connecticut Industrial Arts Association will be as follows:

Spring Conference — April 18 and 19, 1952, at Teachers College of Connecticut, New Britain, Conn.

Fairfield County Industrial Arts Association — December 12, 1951, at Wilton, Conn., Junior High School. Theme: School Shop Safety.

February 13, 1952, Staples High School, Westport, Conn. Theme: Project Selection in Industrial Arts.

April 9, 1952, Havermeyer School, Greenwich, Conn. Theme: Enameling and Metal Spinning.

May 21, 1952, Norwalk, Conn. Administrators' Night. Theme: Industrial Arts for All Youth.

New Haven County Industrial Arts Associa-

(Continued on page 14A)

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ATKINS JR.-2 Backsaw

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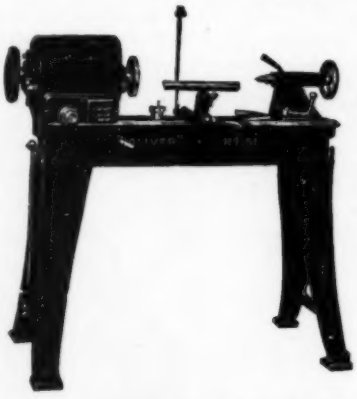

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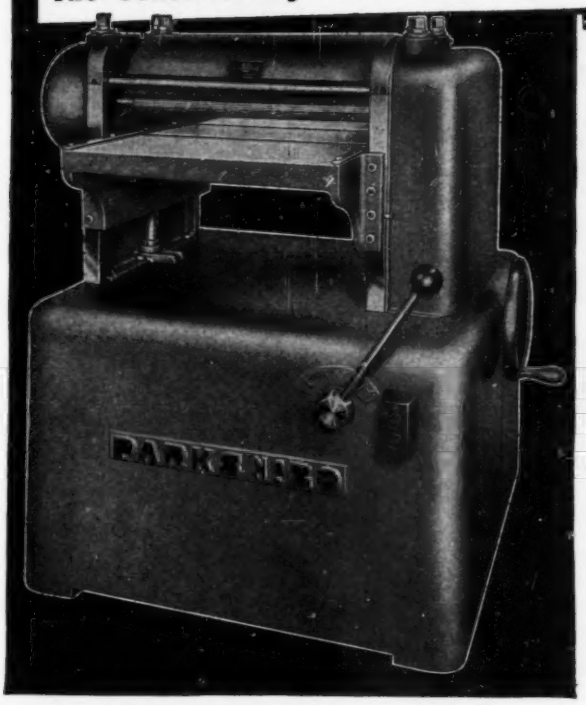

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INDUSTRIAL ARTS *and* VOCATIONAL EDUCATION
JANUARY 1952

Safety Is Self-Preservation

ARTHUR A. DICK
Supervisor of Vocational Education and Industrial Arts
Baltimore County Public Schools
Towson, Md.

An effective school shop safety program does not just happen; it is the result of careful and continual planning. Organized safety instruction in education is becoming increasingly important as is evidenced by several of the larger school systems employing supervisors or directors of safety. Industry and business have been sold on safety programs for quite some time. The purpose of this article is not to be all-inclusive of safety topics, but rather to touch upon the important high spots of present-day school shop safety instruction.

Teachers of industrial education must face squarely the premise that in certain accidents and cases they can be held legally liable especially if negligence can be proved. Then, too, there is a moral obligation. With our everyday life becoming more complex and our shops being furnished with more and more machines and equipment, an increased emphasis and demand for organized safety instruction is imperative.

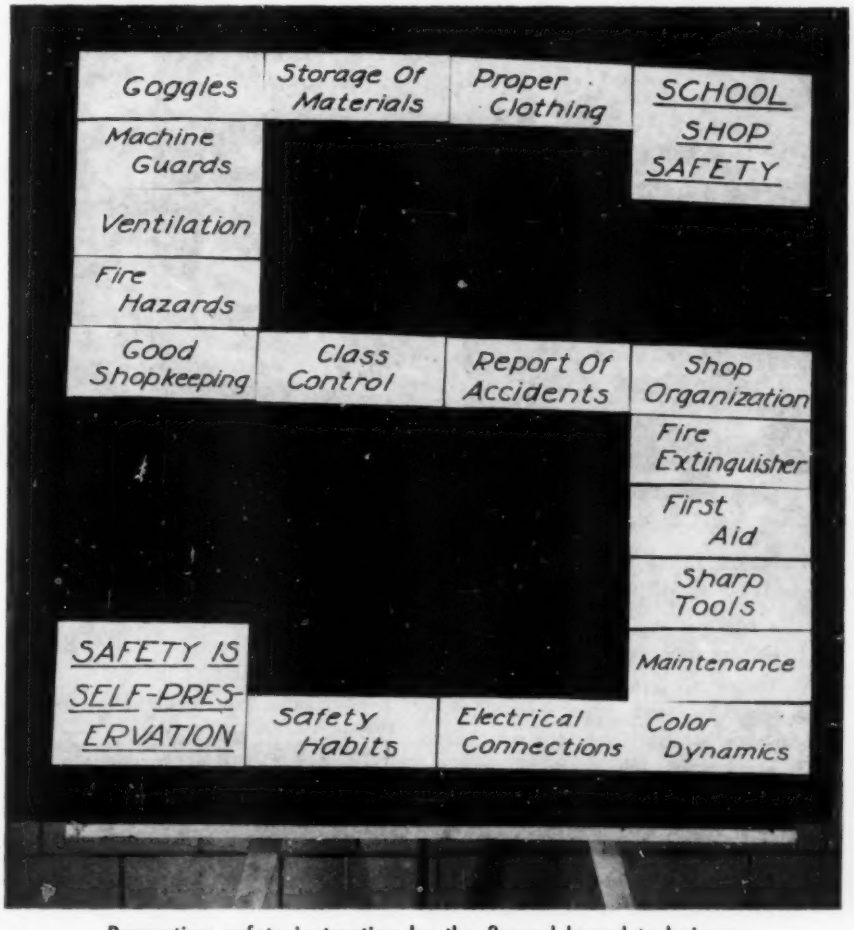
Division of Responsibility

The division of responsibility of a successful shop safety program concerns the school, the administrator and supervisor, the teacher, and the pupil. Following is an outline of some of the pertinent criteria which should be considered for these responsibility areas:

The school. The school philosophy should be that safety is a part of learning to adjust to complex life situations. The school provides in its industrial-education offerings organized safety instruction and experiences as a part of the educational program.

The Administrator and Supervisor

1. Promotes a continuous program of prevention of all types of accidents.
2. Provides for, or recommends, selected and available instructional aids and devices.
3. Safety instruction is a part of the basic courses of study.
4. Participates actively in community safety programs.
5. Provides for the use of accident report forms and follow-up.
6. Arranges and conducts safety meetings.



Presenting safety instruction by the flannel board technique

Examples of safety posters for shop use

— Posters, courtesy of Maryland Casualty Company

7. Makes safety inspections of shops followed by written reports.

The Teacher

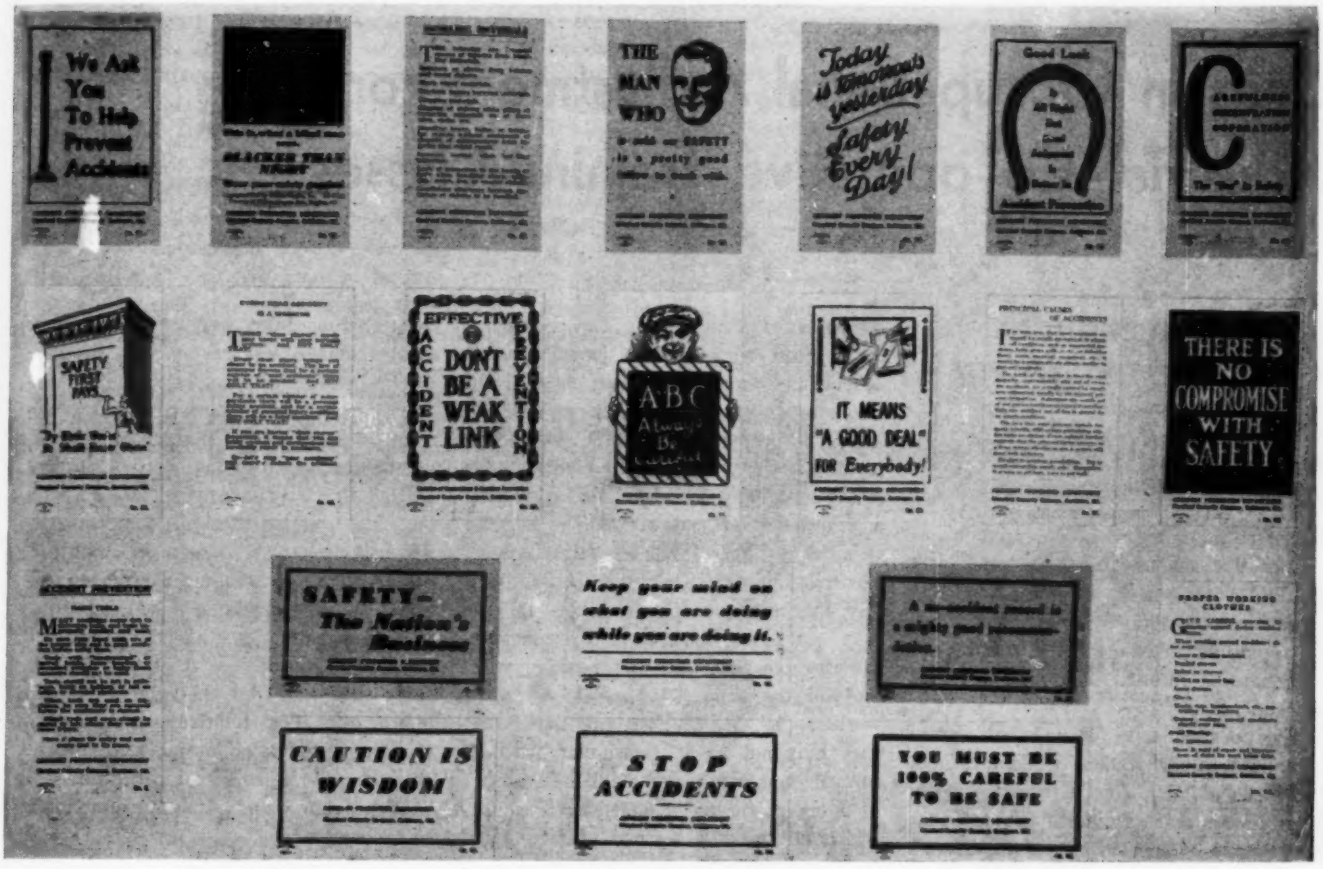
1. Carries out constantly the safety instruction.
2. Develops and uses lesson units utilizing visual aids in safety education.
3. Emphasizes the practical application of safety in the shop, the home, and in industry.
4. Uses safety devices at all times.
5. Administers safety tests.
6. Makes a written report on every accident.
7. Follows up every accident and recommendation.
8. Is thoroughly sold on good shop-keeping; cleanliness and orderliness are absolute essentials of safety.
9. Has a functioning pupil personnel system.
10. Keeps machines, equipment, and tools in good condition at all times.
11. Has a positive attitude of accident prevention and does not assign hazardous duties to pupils.

The Pupil

1. Is continually safety conscious as evidenced by his actions in and out of school.
2. Participates actively and intelligently in all forms of safety instruction.
3. Appreciates the need for and use of safety devices in the school shop, at home, and in industry.
4. Uses safety devices and safe practices at all times.

Methods of Teaching Safety

A negative philosophy — "It can't happen to me," has no place in school safety. Shop teachers must be safety minded and have an alert awareness of all types of


We Ask You To Help Prevent Accidents
THE MAN WHO
Today is Tomorrow's yesterday Safety Every Day!
SAFETY FIRST PAYS
EFFECTIVE ACCIDENT PREVENTION DON'T BE A WEAK LINK
ABC
IT MEANS "A GOOD DEAL" FOR Everybody!
THERE IS NO COMPROMISE WITH SAFETY
SAFETY— The Nation's Business
Keep your mind on what you are doing while you are doing it.
CAUTION IS WISDOM
STOP ACCIDENTS
YOU MUST BE 100% CAREFUL TO BE SAFE

Sample safety card reminders

— Cards, courtesy of Maryland Casualty Company

hazards. Then there is the consideration that the teacher may be accident prone and that the negative qualities of this trait may be carried over to the pupils. The teacher should ask himself this question —"Do I set a good example in safety at all times?" Even though all precautions are taken accidents will happen because of human failure and carelessness.

It is necessary for all concerned to be constantly cognizant of trends in safety education; the presentation of factors affecting shop safety can be effectively demonstrated to groups by the "Flannel Board Technique." Safety posters are available for bulletin boards and should be changed at suitable intervals. Student committees can be assigned to be responsible for the safety bulletin board. All safety materials should be specifically called to the attention of all pupils and fitted in as a part of the instruction. *One word, one device, one idea, or one visual aid may save a pupil's life or prevent an accident.*

In larger school systems where circular letters go out periodically to shop teachers a safety card or reminder can be attached to the letter. In this respect safety slogans can also appear at the end of these letters. There is an urgent need for constant motivation which results in safety teamwork and the maintenance of high morale. Proper safety practices in the shop become habits and the provision for their instruction should be a part of every basic course of study. Good habits of safety should carry on outside of the school. The subject of safety should be stressed continually *in different ways* and *in small doses* with a definite purpose; otherwise the instruction is dull and ineffective with little real meaning. Simple policies and rules should be established and then must be enforced. In other words, there must be no compromise with safety.

Numerous films, slides, charts, models, and materials are available. It is a generally accepted practice that all films and slides be previewed by the teacher for efficient and worth-while presentation to pupils. Safety exhibits, conferences, and plays can be promoted. Color dynamics and luminous paints have many possibilities and uses in school shop safety. The materials of safety are available and it is simply a question of the teacher selecting the ones which will fit in with his subject and teaching.

Positive safety education is based on accident prevention. Present-day conditions make it imperative that safety education be a part of the training of all industrial-education teachers; it should be a part of every course of study and shop teachers should teach, practice, and display safety as a part of their planned and organized instruction. Because of legal liability and moral responsibility it is good common sense for every shop teacher to prevent accidents by eliminating, as far as he can, all mechanical and physical hazards because these are tangible. Other phases of safety instruction are intangible, but nevertheless important in the over-all picture. Positive safety instruction is self-preservation for the pupil, for the teacher, for the supervisor and for the administrator. Safety is everybody's job!

Units in Occupational Adjustment For Industrial-Co-operative Training Classes

LELAND B. LUCHSINGER
Co-ordinator, Industrial Co-operative Training
High School
Beaumont, Tex.

Classes in part-time co-operative training in diversified occupations have been steadily growing in number in our schools throughout the nation. Added impetus has been placed on co-operative training of this nature through emphasis on life adjustment.

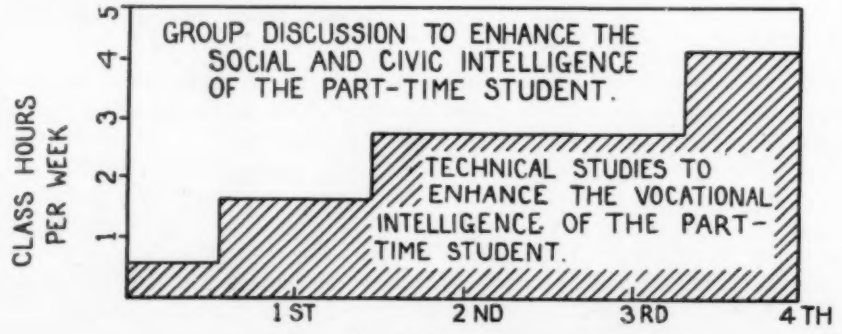
The question arises as to what should be taught to the student while in school that will aid him on his training job. Most classes teach technical subjects that are directly connected to each student's occupational choice, but this in itself is not enough. The greatest shortcoming of this type of education is that it fails to stress adequately the importance of the proper attitude toward the employer and the job. The greatest need for instruction should center around the occupational adjustment which the students must undergo before they can progress on their training jobs and in their schoolwork.

In Texas a group of teachers of industrial co-operative training classes has recognized this need with the results that a suggestive outline for units in occupational adjustment has been developed. This group's co-operative undertaking, with a few revisions, is used daily in teaching classes of students in part-time training.

Information on occupational adjustment subjects is usually presented during the class period by group discussions in which all members participate with one student usually acting as discussion leader for the group.

The primary purpose of the group discussion in occupational adjustment is to develop *civic* and *social* aspects of the "part-time" student's life. It is the aim of this series of units to develop confidence and create wholesome attitudes toward school and employment; to develop an understanding of the importance of such assets as proper work habits, job ethics, loyalty, honesty, and initiative; to develop latent leadership abilities; and to develop a knowledge of and an ability to take care of ordinary business transactions. For many students, jobs obtained through the diversified occupations class are the first real jobs they have ever held — at least the first they are working with, and on the same level as, many adult workers. It is only natural then, that they may not have "grown-up" attitudes toward their employment and be ignorant of many of the so-called ethical practices which adults have learned over a period of years and have come to take more or less for granted. The first few months — and certainly the probationary period — is the most critical period in a part-time student's training. Several factors, such as the confusion of a new environment, the fear of not being acceptable to the employer and fellow workers, and the realization of the lack of experience and technical knowledge, prey upon the emotions of the average beginning student to the extent that he may develop undesirable work habits or may become antisocial and emotionally unstable unless the transition from school life to employment is made less severe.

The building of confidence and creating desirable attitudes toward school and employment are the first responsibilities of the teacher-co-ordinator to a student. During the early months of related training, the related technical information which is directly related to each student's chosen trade, surrounding a given occupation — as necessary as it is — is secondary in importance to putting the student in the proper psychological state where he can really profit from this related technical instruction. The relative importance of the group discussion or indirectly related study and related technical studies or directly related study is shown graphically as follows:



Relative importance of group discussions

With reference to the foregoing graph it can be seen that at the outset the group discussion or indirectly related study occupies a place of greater importance than the related technical studies or the directly related study; and that as the training progresses, the need for it "tapers off" as the technical information, which is directly connected to the trade of each student, assumes greater importance.

By way of summary: frequently, it will be found that the attitude of the worker toward his job, his loyalty to the firm, and his apparent fitness for the job, are

the factors upon which the employer bases his evaluation of a beginning worker, rather than upon any elementary skills or technical information he may already have, or be about to acquire. Many employers today remark on the attitude and behavior of their employees as being far from desirable. This being true, it is the primary obligation of the teacher-co-ordinator to strive to improve his beginning students' attitudes toward their work and understanding of human relationships.

The content of the following outline is not intended as a course of study, but as a guide for teachers and co-ordinators in leading group discussions with their class members. It proposes to help the leader select appropriate discussion topics, choose a suitable method of presenting the information, and build up interest and active participation on the part of class members. A proposed outline of units in occupational adjustment for industrial co-operative training classes follows:

UNITS IN OCCUPATIONAL ADJUSTMENT FOR INDUSTRIAL-CO-OPERATIVE TRAINING CLASSES

First Year

A. Orientation
1. Meaning of the industrial co-operative training program
2. Choosing a vocation

B. Job Application
1. How to apply for a job
2. The job interview

C. Job Relations
1. Introductions
2. How to remember names
3. Getting a good start on the job
4. Why work?
5. Importance of jobs
6. What do I want from a job?
7. What employers want
8. What job opportunities are open for me?
9. How to act on the job
10. Job aptitude
11. Working with others
12. Initiative on the job
13. Willingness to work
14. Factors that enable you to hold your job
15. Filling out a student job report
16. What a part-time student owes his employer
17. Making progress on the job
18. How does punctuality enter into the job?
19. Working with a faultfinding employer
20. Smoking in relation to the job
21. Effects of drinking on the job
22. My responsibility for property that is not mine

D. Job Ethics
1. Loyalty to the firm for whom you work
2. Honesty while at work
3. Dependability on the job
4. Proper job attitude
5. Employer-employee relations
6. Job pride
7. Jealousy and the job
8. Gossiping on the job
9. Job initiative
10. Co-operation on the job
11. Progress on the job

A group discussion in progress

E. Vocational Education
1. What is vocational education?
2. History of vocational education

F. Club Work
1. Why belong to a club?
2. Organizing the local club
3. Parliamentary procedure
4. How to conduct a meeting

G. Safety
1. Why practice safety?
2. Precautions to be observed on the job
3. Clothing in relation to safety
4. Lifting without injury

H. Personality Development
1. The importance of personal appearance
2. How to select proper clothing
3. Gaining background
4. Interest in people
5. Being a good listener
6. Live with enthusiasm
7. Consideration of others
8. Why people like you
9. Qualities of a courteous person
10. Value of good personality on the job
11. Use of good manners
12. How tact aids personality

I. Character Development
1. What is character?
2. My ideals
3. The value of congeniality
4. Being friendly
5. Helping others

J. Personal Qualities
1. How to develop leadership ability
2. How to overcome prejudices
3. Reaction to new ideals
4. What are things that discourage me?
5. Gaining self-confidence
6. My chosen occupation
7. My leisure time — use of it

K. Health
1. The importance of good health
2. Colds, their causes and remedies
3. Fresh air and your work
4. Cleanliness
5. Physical examinations
6. How does my health affect my relationship with others?

L. School Relations
1. School policies
2. Why study related subjects
3. Making the best use of your mind
4. How can I make the best use of my daily time?
5. What does my report card mean?
6. How to study more effectively
7. Reception of the new student into the class
8. My responsibility to the school
9. Education or propaganda
10. Follow-up of a field trip

11. Going steady
12. My crowd
13. Characteristics of an effective student
14. How should I act at school functions?

M. Laws
1. Social Security
2. Labor laws — state and federal
3. How the Fair Labof Standards Act affects us

N. Civic Responsibilities
1. What are the responsibilities of a good citizen?
2. Voting procedure
3. My city

O. Business Transactions
1. Postal regulations
2. Proper use of the telephone
3. Handling money
4. Detecting counterfeit money
5. Packing and crating

P. Taxes
1. Taxes and their importance to me
2. Withholding taxes from wages
3. How income taxes affect us

Q. Personal Transactions
1. Value of a personal budget
2. Savings accounts
3. How to fill out an application blank
4. Writing a letter of application
5. Personal records

R. First Aid
1. Introduction of how and why of first aid
2. How to stop bleeding
3. Treatment of shock

S. Social Security
1. Why we have social security
2. Application for an account number
3. Public assistance and health and welfare services for mother and children
4. Old age and survivors insurance
5. Why people work

T. Business Law
1. Simple business contracts
2. Unenforceable agreements
3. Terminating an offer
4. Employer's liability for injuries to employees

U. Economics
1. Supply and demand
2. Production in industry
3. Free enterprise

V. Driver Education
1. Safety in operating motor vehicles
2. Driver's license requirements
3. How to obtain a driver's license

W. Feelings and Emotions
1. Self-control and will power

Second Year

A. Job Relations
1. Growing on the job
2. Reasons for building a good employment record
3. Factors aiding promotion
4. Meriting advancement through work
5. Seniority on the job
6. Reporting substandard work to the foreman
7. When is the part-time student a success?
8. Services of the Texas State Employment Commission

B. Job Ethics
1. Should I ask employer accommodations?
2. Etiquette in business

C. Safety
1. Student report on job safety
2. Safety in the home and at school
3. Safety in business and industry

D. Personality Development
1. Improving my conversational ability
2. Courtesy in public places
3. Being of service to others
4. Friendships that pay large dividends
5. Why we like people
6. Cleanliness and personality

E. Character Development
1. How can I take defeat?
2. What is my part in my home life?
3. Cleanliness in thoughts
4. Face the future bravely

F. Personal Qualities
1. What are my basic needs?
2. What can I do for fun?
3. The formation of habits
4. Developing individuality

G. Health
1. The effect of worry
2. Oral hygiene
3. Wise use of leisure time in health
4. Fighting the invisible enemies of health
5. Cleanliness and health
6. Being physically active

H. School Relations
1. Boy-girl relations
2. Improving grades in high school subjects
3. How should new and old students act toward each other?
4. What opportunities are there in school for me to learn how to get along with others?

I. Laws
1. Workman's compensation
2. Employment compensation
3. Organization of State Department of Vocational Education

J. Civic Responsibilities
1. Care of personal and public property
2. The effect of gossip and "small talk"
3. Active participation in civic affairs

K. Business Transactions
1. Banks and banking
2. How international relations affect our jobs

L. Taxes
1. State and local taxes
2. Hidden taxes

M. Personal Transactions
1. Life insurance
2. Credit and commercial papers
3. Installment buying
4. Payment of debts
5. Loans and credit
6. Managing personal finances wisely
7. Consumer knowledge

N. First Aid
1. How to stop bleeding
2. Treatment of shock
3. Importance of Red Cross First Aid classes

O. Business Law
1. Partnerships and corporations
2. Law of personal property
3. Real property laws

P. Economics
1. The American way of life
2. Competition and monopoly
3. Profits for risk taking
4. Economic security

Q. Driver Education
1. Traffic safety
2. Traffic ordinances

R. Feelings and Emotions
1. Suppressing anger
2. Emotions affecting social acceptance

S. Industrial Problems
1. Unemployment
2. Basic wages and hours in your community
3. Labor organizations
4. Management organizations
5. Labor and management relations

T. Future Plans
1. Should I go to college?
2. Should I continue my vocational training?
3. Additional vocational education available

Information Sheets on Occupational Adjustment Subjects

1. Meaning of the industrial co-operative training program
2. Choosing a vocation
3. How to apply for a job
4. The job interview (dramatization)
5. Introductions
6. How to remember names
7. Getting a good start on the job
8. Telephone techniques
9. How to overcome a lack of self-confidence

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The Timber Engineering Company, in Washington, D. C., has a machine for testing the mechanical wear on railroad ties which, in 800 hours, can give a tie as much wear as it would receive in 20 years of normal service. — *Natl. Lumber Mfg. Assn.*

Leaders in Industrial Education

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(Continued from page 389 of the December, 1951, issue)

FRANK MITCHELL LEAVITT (Concluded)

The Sociologist's Approach

The fifth distinguishing characteristic of the book, and possibly the most significant, was its emphasis upon the sociological point of view. In this respect, Leavitt's treatment of the problem of industrial education was in marked contrast with much of the discussion of that period. Before this book appeared, most of the public addresses, magazine and newspaper articles, pamphlets and reports, reflected the primary interests of employers and workers in measures which would improve the quantity and quality of manufactured products and personal services, which would ameliorate working conditions, and which would by the accomplishment of these more direct aims ultimately assist in raising the standard of living. Secondary objectives included better educational opportunities generally for children, more practical and useful schooling for those who could not or would not go to college, and provision for employed workers and other adults to make up for lost opportunities for schooling in youth.

Leavitt did not ignore, or neglect, or minimize these aspects of the problem, but gave them full weight and adequate consideration. What he did was to raise the entire discussion to a higher level by setting forth the vital and continuing interest of society in the welfare of every one of its component elements, including the children who cannot be expected to know what their own best interests are, and who cannot speak effectively for themselves. By suggesting the examination of all proposals affecting the reformation or reorganization of the public school system in the light of what is best for society as a whole, after careful consideration of the claims and recommendations of employers, workers, and school authorities, the most generally acceptable basis of discussion was assured, as well as the most widely appealing, and the most permanently unassailable.

Very early in the discussion Leavitt pointed out that "in the securing of a fair opportunity for all to attain reasonable happiness; in the necessary reduction of poverty, unemployment, and delinquency; and in the promotion of individual efficiency and social solidarity, the schools have only a fractional part of the responsibility." To reach the desired results, "society must cooperate in securing the enactment and the adequate enforcement of wise child-labor and school-attendance laws, and the improvement of working conditions in general."

There can be no doubt that the book was widely read. It was influential, not only in disseminating information, in guiding public discussion, and in forming the opinions and conclusions of many general readers, but also in the deliberations of superintendents, principals, and boards of education, in the formulation of plans for the reorganization of old and the establishment of new schools, and in the setting up of standards by which courses of study, buildings, equipments, and methods of teaching could be evaluated. My own personal copy of the book disappeared many years ago, when some borrower failed to return it, although I well remember how much it meant to me over a period of years of study. When I checked a copy out of the College library recently (it had been acquired in January, 1914), I noted the evidence of long-continued use, and more than ordinary wear-and-tear. Incidentally, I noted also that the last time anyone had checked it out was more than ten years ago!

Prevocational Education

Another significant contribution, for which Mr. Leavitt was responsible as coauthor, was the book on *Prevocational Education*, which appeared three years later than the one reviewed above.[6] The chief value of this book, like the other, was its timely appearance at a critical period of evolving educational theories, of significant experiments in public education, and of rapidly changing practices in school organization, administration, and offerings.

To begin with, the term "prevocational" probably needs explaining, for the student of today seldom meets the word in his current reading assignments. Mr. Bennett discusses the "prevocational school" as one of four or five "more or less definite types of school evolved or further developed during the ten years, 1907–17," in response to increasing demands of employers, labor leaders, and the public generally for more practical instruction in the public schools.[7] "The type of school to be started depended upon local conditions," and there were many experiments. Among these schools were: (1) the prevocational school, or elementary or intermediate industrial school, (2) the continuation school, (3) the part-time co-operative school, (4) the day vocational or trade school, (5) the apprentice or corporation school.

The term, prevocational, was used first, apparently, in connection with the work of special classes organized for boys in the Boston schools. "In the same year that the Douglas Commission made its report (1906), the Boston School Committee established the first special class for boys who were 'industrially inclined' (in the Agassiz School). Classes of this type are now called 'prevocational,' and have been established in eight different elementary districts. These 'prevocational centers' are a part of the regular

[6] Frank M. Leavitt and Edith Brown, *Prevocational Education in the Public Schools* (Boston: Houghton Mifflin Company, 1915), cloth, 245 pp.
[7] C. A. Bennett, *op. cit.*, pp. 528, 529.

school system, are a development of the manual arts department, and are supported from the regular school fund."[8] Another school of somewhat similar organization and objectives was the Elementary Industrial School in Cleveland, Ohio, which opened in 1909.

Definition

Leavitt and Brown distinguished prevocational from vocational education by pointing out that the former is preparation for vocational education, whereas the latter is preparation for the vocation itself. By contrast, "the traditional work of the elementary school is preparatory for the high school which, in its turn, is preparatory for still higher education, . . . and the practical application of it all (from the standpoint of the pupil) seems to be postponed indefinitely. . . . A prevocational course is an attempt to modify the work commonly found in grades seven and eight . . . in order to motivate that work for those pupils who have been seriously retarded and are hopelessly behind grade because they need the stimulation which comes from concrete doing."[9]

The authors made it clear that prevocational courses were not recommended as a substitute or replacement for the general education of the elementary school, but only as a supplementary offering for the benefit of pupils who cannot take advantage of the traditional college-preparatory curriculum. It was not considered necessary to substitute something else "for work which has been conducted so successfully with thousands upon thousands of children. It is neither desirable nor necessary to relinquish traditional practices which are contributing so surely to the progress of many school children, (but rather) to urge the adoption of different courses and new methods for that considerable group of children who do *not* succeed with the traditional work."

The Interest of Society

Further, the establishment of prevocational work was described as "essentially one of the features of the great social movement toward universal education," the outcome of which might well be "the opening of our palatial high schools not only to the small minority who are now receiving the benefits . . . but to the vast majority of boys and girls of high school ages, many of whom are hopelessly stranded in the grades. . . . Our high standards of admission (to the high schools) are really evidences of the relentlessness with which we have excluded from these institutions the very children who need them most. When our high schools shall become thoroughly democratized, and when secondary education shall mean education appropriate for any and all normal children between 12 and 18 years of age, it may well be that prevocational work will pass off the stage, and that the term will no longer have any significance. For the present, however, 'prevocational education' must stand for the symbol of liberality in providing, either in the upper elementary grades or in our high schools, appropriate types of educational activities for all children, and for a promise that such work will be administered in the spirit of justice and impartial sympathy."[10]

This observation proved to be prophetic so far as concerned the disappearance of *prevocational work* from the schools and the obsolescence of the term. Even before the conditions posited by Leavitt were fulfilled — namely, "thorough democratization of our high schools" and the provision of "education appropriate for all children of 12 to 18 years of age" — the evolution of the public school system had provided better and more effective means for accomplishing the results envisioned by the *prevocational* evangelists.

In the experiments with the elementary industrial school in Boston, Cleveland, Detroit, and elsewhere, it was kept clearly in mind that emphasis upon shopwork and drafting, "providing education with an industrial bias parallel with that having an academic bias which was prevalent in the traditional seventh, eighth, and ninth grades," was not intended to, and actually did not, prevent a pupil from going on to high school if he so desired and was able to. What the prevocational course and the elementary industrial school did was to demonstrate the need and the possibilities of a new type of school, with curriculum, organization, and methods modified in such ways as to meet the needs of boys and girls more effectively and more completely than had been possible under the conditions of the traditional elementary school.

These experiments paved the way, more or less directly, for the development of a system of schools of a new type, the junior high school. The success of the experiments led to the inescapable conclusion that "what had been demonstrated to be a good thing for a few specially selected pupils should be made available for all pupils."

And thus we see unfold a most unique development in the history of the movement for industrial education. The early leaders in prevocational education did their work so thoroughly and so effectively, they laid the foundation for something so much better and more acceptable, that *prevocational* no longer seemed adequate or appropriate, and simply faded out of the picture. In the jargon of baseball, it was a *sacrifice hit!* And a major portion of the credit for the *play* — and the advanced steps that were taken — must be awarded to Frank M. Leavitt and Edith Brown. The contribution that *Prevocational Education in the Public Schools* made to the progress of events was decisive.

This book appeared just at the time when these developments were about to take place, when employers and workers were clamoring for more practical curricula in the schools, and when superintendents and principals throughout the country were aroused by visions of new social responsibilities, new concepts of the meaning of education, and by public agitation for sweeping changes in the public schools to meet unprecedented and hitherto almost unheard-of demands. At this opportune moment this book provided for educators and the public generally a sane and authoritative analysis of the problems to be solved, accompanied by readable and intelligible suggestions as to what to do, how to do it, and why. For administrators and teachers, who were necessarily interested in technical details of procedures and methods, the book included complete outlines covering all phases of the program.

Like Leavitt's other book, there can be no doubt that *Prevocational Education in the Public Schools* was widely read and studied. It did not have as wide circulation among nontechnical and nonprofessional readers, or perhaps even among educators generally, but it was most helpful to teachers *on the job*, and was especially influential during the period when junior high schools were being planned and established.

[8] Leavitt and Brown, *op. cit.*, p. 21.
[9] *Op. cit.*, p. 4.
[10] *Op. cit.*, p. 11.

Professional Organizations

In common with other leaders considered in this series, Leavitt was active in many professional organizations, in several of which he served as officer, and as chairman or member of important committees. From an early date he was an active member of the National Education Association, and of the Department of Superintendence, later the American Association of School Administrators. He served two terms, 1904 and 1906, as president of the Department of Manual Training of the National Education Association. He was active in the organization of the National Society for the Promotion of Industrial Education, from 1908, and its successors, the National Society for Vocational Education, and the American Vocational Association.

During his term of service at the University of Chicago he assisted in the organization of the Vocational Education Association of the Middle West, in 1913, and served as its second president, in 1914.

In November, 1910, shortly after Leavitt went to Chicago, a national conference on vocational guidance was held in Boston, called by the Chamber of Commerce in co-operation with the Vocation Bureau and the Boston public schools. Leavitt helped lay the groundwork for this conference, and assisted in an advisory capacity for a second conference which was held in New York City in 1912. In October, 1913, a third meeting was called, in Grand Rapids, Mich., for the purpose of considering the advisability of organizing a permanent society to study the problems of guidance. There was full discussion of the respective merits of a plan to organize as a section or department of some existing association, and of a plan to found an independent organization. The advocates of the latter plan, headed by Professor Leavitt, won out, and the National Vocational Guidance Association was organized. Leavitt was elected the first president, 1913–14.

He was active also in the formation of the Eastern Manual Training Teachers Association, later the Eastern Arts Association, and the Boston Manual Training Club, pioneer organization of these two types, and served the former as president one term, 1908. He was a member of the Illinois Manual Arts Association, which later merged with the Illinois Vocational Association, and served as president in 1912; also a member of the Pennsylvania State Teachers Association.

He was an active member of the Manual Arts Conference of the Mississippi Valley from 1910 to 1918.

He was a member of the editorial staff of *Industrial Education Magazine*, from 1911 to the date of his retirement, in 1936. To this and other professional journals he contributed numerous editorials and articles.

Personal

In conclusion, I may add that Leavitt is a man of just under six feet in height, and weighs perhaps 175 to 180 lb. Looking back on his terms of service at the University of Chicago and in the Pittsburgh schools, when I knew him best, I remember him as a man of most genial and likable personality; I am not sure that I should go so far as to say vivacious; but certainly he gave the impression of one always mentally alert, with abundant physical vigor and energy; and always characterized by a sense of humor. It is a rare and cherished privilege to count him among my personal friends for more than 40 years!

(To be continued)

Responsibilities of Industrial Education Instructors

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The following statement of responsibilities of industrial education instructors were developed by a group of sixty graduate students in a workshop at Bradley University, Bennett College, in the summer of 1950. The group was composed of teachers, supervisors, and teacher trainers from twenty-two states, Panama, and Canada. The workshop was conducted by M. J. Ruley, supervisor of industrial arts and vocational education, Tulsa, Okla., as a part of the regular summer program sponsored by Dr. Fred Strickler at Bradley University.

Responsibilities of Industrial Education Instructors

The industrial education instructor as a teacher should:

1. Have a sound philosophy of education.

2. Have a sound philosophy of industrial education.

3. Be able to establish and maintain a good shop organization.

4. Be able to promote interest on the part of the students.

5. Always have the objectives of industrial education clearly in mind.

6. Have technical skills.

7. Have general and technical knowledge — safety, etc.

8. Understand and be able to apply analysis techniques.

9. Have character and a good personality.
10. Have an understanding of human behavior.
11. Be able to evaluate student progress.
12. Have a professional attitude.
13. Practice guidance.
14. Understand and be able to use the proper methods of teaching.
15. Show leadership.
16. Be able to maintain good discipline.
17. Experiment with new ideas.
18. Recognize and handle individual differences.
19. Possess personal qualities.
20. Practice and exemplify good health habits.
21. Develop and carry on good teacher-pupil relationships.
22. Promote good public relations.
23. Present a good personal appearance.
24. Maintain high student morale.
25. Organize and carry on a program of shop maintenance.
26. Be able to express himself effectively.
27. Be able to accept responsibilities.
28. Make wise use of leisure.
29. Have as broad a background of experience and training as possible.
30. Be able to adjust varying situations.
31. Be able to evaluate himself and make adjustments where needed.
32. Be able to establish and maintain good shop management.
33. Have a standard of performance.
34. Possess the ability to develop instructional materials.

As a Faculty Member

The industrial education instructor as a member of the faculty should:

1. Become acquainted.
2. Present a good personal appearance.
3. Be co-operative.
4. Be a participating member.
5. Have a pleasing personality.
6. Be able to make adjustments in the social group.
7. Be professional.
8. Be ethical.
9. Be able to express himself effectively.
10. Exercise good leadership.
11. Respect authority.
12. Have an understanding of the total school program, state laws, and regulations.
13. Be open-minded.
14. Show personal interest.
15. Become recognized professionally.
16. Encourage inter-class visitations.
17. Develop self-reliance.
18. Develop broad interests.
19. Make adjustments with the faculty and family.
20. Promote guidance and counseling programs.
21. Possess good personal qualities.

As a Member of the Community

The industrial education instructor as a member of the community should:

1. Become acquainted.
2. Set an example.
3. Take part in community activities.
4. Present a good personal appearance.
5. Affiliate with community organizations.
6. Exercise good judgment in community issues and problems.
7. Assist in public relations.
8. Establish personal integrity.
9. Accept community responsibilities.
10. Help clarify school policies and programs.
11. Know your community, history, and resources.
12. Possess good personal qualities.
13. Establish permanence.
14. Promote adult classes.
15. Establish industrial identity.
16. Promote activities for leisure.
17. Conduct surveys.
18. Foster a community spirit.
19. Understand the world community.

How Good Is That New House?

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For the average individual buying a home is the largest single investment he will ever make. How can he be sure that the investment is a wise one and that full value will be received? The price of a house today which runs into thousands of dollars, more than double the cost of a few years ago, necessitates that one get assurance as to the value of his investment. How can one tell? Just how good is the construction? How can one compare one house with another?

The problem is easier than may first appear. There are a number of checks that can be made by which a house can be judged. The subject divides itself naturally into three parts: (I) the location and neighborhood; (II) the general appointments; and (III) the quality of construction. Nothing will be said regarding design as this is a personal matter which varies with the tastes and desires of each individual.

I. The Location and Neighborhood

The location of a house should depend somewhat upon the location of employment. Time required to travel from home to shop or store or in heavy traffic is nonproductive and leaves less time for education, amusements, or whatever one does when not working. There are several factors that should be checked.

1. *Proximity to Community Services:* How close is the house to stores, schools, church, and work?
2. *Public Services:* Are public services such as telephone, gas, and sewer available?
3. *Drainage:* What about the drainage

of the lot? Will heavy rain waters drain off or be carried away easily? If the lot is on a hillside retaining walls will be needed.

4. *Street Improvements:* Are street improvements in, such as paving, curbs, sidewalks, and street lights? In the normal progress of any city, street improvements eventually are demanded and usually cost each home owner his proportionate share. This prospective financial outlay must have consideration for people who are working on a limited budget.

5. *Transportation:* How good are the transportation facilities to school, work, stores, amusement facilities, etc.?

6. *Neighborhood:* What about the appearance of surrounding houses? Do most of the people own their own homes? Do they show evidence of care, indicating that the owners are interested in their homes?

II. The General Appointments

Houses vary greatly in many respects other than appearance. The presence or absence of specific items per house greatly affect the cost. In most cases a prospective buyer can determine the relative values of different houses by making a brief inspection. The following information is divided into two major parts: what can be seen on the exterior and what can be seen on the interior of the house.

A. *Exterior Appointments*

7. *Garage:* Is there a garage? Houses *are* constructed without a garage. If there is a garage how large is it? Whether single or double, it should have some storage shelves with maybe a small bench built in as part of the building. The best lighting arrangement permits the garage light to be turned on from either the back door or the garage. This is known as a three-way switch (three wires are required).

8. *Gutters and Downspouts:* Easily ascertained items which add to the cost of a house but are valuable additions are gutters and downspouts. The control of rain water by directing it to proper channels of drainage is very important in locations that have heavy rains.

9. *Lawn Sprinkler System:* If the lawn is in, check on the method of watering. Sprinkling systems are the best but add to the total cost of the house. Sprinkler heads can be seen easily.

10. *Water Shutoff and Hose Bibs:* A water shutoff where the water feeder line enters the house is invaluable as the water can be turned off easily in an emergency. The number of hose bibs (water faucets) should be checked to see if the gardens and shrubbery can be watered conveniently without having to move the water hose.

11. *Ground Improvements and Planting:* Such items as walks and drives and retaining walls, fences, incinerators, clothes line poles, landscaping and trees add to the livability of the house and are a *must* for most families. From the financial point of view they are part of the total price of the house if included, or will be an additional cost to be paid for by the new owner. Hence a careful check should be made when judging or comparing one house with another to see how many of these items are present.

B. *Interior Appointments*

12. *Basement:* The need for a basement varies in many parts of the country. Some locations deem it necessary to have a full basement for the storing of fruits and vegetables. In other locations the basement is limited to holding the gas furnace. Many houses have no basement whatever.

The presence of a basement, whether large or small, would imply increased costs. It is assumed that the basement has concrete floors and walls. In the best type of construction an access stairway is constructed with protecting railings and an entrance door.

13. *Windows:* How many windows are there in the house? The cost of adding another window increases the cost of a house. Another window means one more window shade, one more window curtain. For the builder an extra window means more millwork, more hardware, and more labor. Plasterers never deduct openings of average size when computing the cost of the plastering job, as it costs *more* to plaster around an opening than to plaster a flat surface.

Some rooms will have one window only, others will have as many as four. To compare one house with another on this basis count the openings in each house and see which one has the most. Ordinary five-room houses vary from 10 to 22 windows.

14. *Doors:* The same variance applies to the doors. The cost of the house will increase by adding doors for the same reason as adding windows. The arrangement of a house will usually determine the number of doors needed. On this point the difference will be from 8 to 13 for an average five-room house.

15. *Closets:* The number of closets and size of each should be checked. Each bedroom should have at least one closet or wardrobe. If limited in size this fact should be noted. In the better class house each closet that is constructed next to an outside wall will have a window for light and ventilation.

16. *Linen Closet:* The linen closet should be checked for size, number and width of the shelves. The best construction requires the walls and ceiling to be lined with tongue and groove red cedar. This is a worth-while item but again affects the construction budget.

17. *Cabinets:* The number of cabinets in a house varies. The checkup is easy: count all of the cabinet doors and drawers. It may be a surprise to find the difference in number between two houses that apparently look alike. More cabinets make for better livability but naturally run the costs up.

18. *Bathrooms:* How many bathrooms are there? This will vary from one to two full bathrooms for an average five- or six-room house.

19. *Shower Facilities:* The shower plumbing over the bathtub involves only the installation of a shower head and the necessary hot and cold water pipe lines. A stall shower is recognized, however, as being the best type. The floor and walls are usually tiled and the job completed with a [illegible] shower door.

20. *Double Sink:* Many new houses today are using the divided or double sink instead of the 20 by 30-in. single cast iron sink formerly used. This type of sink requires a swivel faucet to permit the water to be directed to either half of the sink. However, a swivel faucet should be used even though the sink may be single, as this mixes the hot and cold water to the desired temperature.

21. *Lavatory Mixing Faucet:* It is an advantage to have a faucet on the lavatory that permits the hot and cold water to be mixed together. When this type of faucet is used there is only one faucet on the fixture.

22. *Hot Water Heater:* The label on the tank should be read to determine the capacity. Twenty gallons is standard. The quality of the heater is not so easy to determine. The best tanks today are copper lined and have an automatic gas shutoff.

23. *Electrical Items:* The wiring of a house built today probably has been taken

care of better than other requirements due to our consciousness of living in an electrical age.

a) Outside Light: An up-to-date, well-constructed house will have a light over the rear door so as to light up the back yard.

b) Sink Light: Modern kitchen lighting requires an extra light in the kitchen directly over the sink. The value of this light is most appreciated by the housewife.

c) Outlets: Electrical outlets add much to the convenience of a house. They should be checked as to their number and location. A double outlet provides for the use of two cords from the same outlet. Outlets should be checked in the following rooms: (1) *Kitchen:* The kitchen should have several; one for the toaster, one for the ironing board, one for a refrigerator, and a special heavy voltage connection if an electric range is to be used. (2) *Living room:* The living room should have several as modern lighting suggests lamps for this room and not lighting from a central fixture. (3) *Bathroom:* The bathroom needs an outlet for an electric razor and probably an electric heater. (4) *Bedrooms:* Bedrooms require outlets for bedside lamps. (5) *Service porch:* The service porch needs an outlet for the washing machine and in some cases the ironing board.

d) Doorbells: Many houses have a doorbell for the front door and a buzzer for the rear door. One merely has to look for the push button to discover whether one or both have been installed. For a more pretentious house, chimes are used for both entrances. The bell and buzzer are usually located on one of the kitchen walls; the chimes may be found in a wall niche in the hall.

24. *Tilework:* How much tile is there in the bathroom, kitchen, and service porch? Some bathrooms have tile floors, others have none; some have tiled walls, others have none. The same is true of the drainboard in the kitchen and around the laundry trays in the service porch. Is there little or much? Tile adds value as well as costs to the house.

25. *Insulation:* Insulation has come into its own very rapidly during the past ten years. *Tailor-made* houses (houses constructed to suit an individual owner) nearly always include this item, at least for the ceilings. How to find out if it has been used? Using a step ladder, climb up and look through the scuttle hole to the attic. Insulating material, if used, can be seen in the space between the horizontal pieces of lumber (called ceiling joists) which support the ceiling. Insulation is equally valuable in the exterior walls. To find out whether it has been used will necessitate a question to the builder.

26. *Heating:* The most evident item would be a fireplace, not strictly a necessity but a very desirable convenience. In addition there should be a furnace. A commonly used type is the central floor gas furnace. In cold climates a basement furnace with ducts to the several rooms is a necessity.

27. *Laundry Facilities:* A check should be made on the service porch, in the basement, or in the garage to see if there is a laundry tub and room for a washing machine. Some porches are so small that there is not room for both.

28. *Miscellaneous Items:* A group of miscellaneous items which are found in some houses include a lighted house number, milk bottle receptacle, front door grill, folding telephone shelf, built-in mailbox, medicine cabinet, shoe racks in the closets, and a soap cabinet on the service porch.

III. The Quality of Construction

The quality of construction is best studied by first checking on the reputation of the building contractor. This can sometimes be done through a local bank or through a lumber yard. Reliable contractors establish good reputations. The name of a reliable builder is excellent evidence as to the quality of his construction jobs. However, his reputation is not always obtainable, hence, the prospective house buyer must have other methods of checking on the quality of construction of the house. There are a number of items to check.

A. *Exterior Items*

29. *Depth of Foundation:* Where there is a full basement the depth of the foundation footing is never a problem. When the house has no basement the local building ordinance requirements should be consulted. A hole can be dug next to the foundation wall if one wants to be sure that the foundation fulfills the requirements of the building ordinance. Foundations constructed on top of the ground will sooner or later permit water seepage under the house.

30. *Steps and Risers:* Steps should be of the same height. Wide variance in the height on the risers indicates careless work. It is not uncommon to find from 2 to 3-in. difference in the height of the first step and the rest of the risers.

31. *Cement Porch Floor Height:* The cement porch floor should line up with the bottom edge of the front door sill to eliminate a hazard which exists when a person has to take one step down at the same time he goes through the door.

32. *Ventilators in Foundation and Attic:*

a) Foundation Ventilators: Light secured through ventilators is recognized as an excellent deterrent of termites. Sufficient ventilation keeps the air under the floor joists free from musty odors and also keeps the ground dry. Look for the foundation ventilators just below floor level height.

b) Attic Ventilators: Building ordinances usually do not state definite requirements for attic ventilators. A free passage of air is recognized as one good method to help keep a house cool. For a pitched roof ventilators can be seen by looking at the gable end walls or sometimes, metal ventilators are constructed on the roof itself.

33. *Cleanouts:*

a) Plumbing: Plumbing cleanouts for major waste lines are required in all plumbing ordinances, and should be carried through the foundation wall where they can be used easily. Cleanouts can be found under bathroom and kitchen sink windows.

b) Fireplace: Fireplaces should have an ash dump built in the hearth and a cleanout door at the bottom of the exterior wall of the chimney. Both of these items can be seen if they are present.

34. *Quality of Lumber:* A good check on the quality of lumber used for framing can be made by looking at the garage. One can be reasonably sure that the house construction will be as good quality as the construction of the garage. Large knots indicate a poor grade of lumber, likewise, many small knots in the same piece of lumber.

35. *Size of Ceiling Joists and Bracing of Roof:* A peek into the attic of the house will give evidence as to the size of the ceiling joists and the bracing of the roof. Two by four-in. joists are standard. Two by six-in. joists are coming into greater use and are much stronger and better. Long rafters in the roof should have supports which rest on the *top of the partitions.*

36. *Garage Doors:* Overhead garage

doors are standard equipment. One should check on the *quality* of the door. Some are well made, some are poorly constructed using too few uprights from a poor grade of lumber and a cheap siding board full of knots and defects. The operating hardware can be tested by raising the door to see how easily it works.

37. *Plastering:* For the plastered exterior of a house there are two procedures followed. One, the plasterer puts on two coats and the painter follows with a brush coat. Two, the plasterer puts on three coats, the *third* one being stucco, often in color, so that the finish does not need to be painted. To determine whether there is a third coat of plaster is not easy; a study of the walls might indicate a ⅛-in. thickness of stucco plaster. Otherwise the builder will have to be questioned on this point. The three-coat job is preferable but costs more.

38. *Roofing:* A new roof covered with second-grade shingles looks about the same as if first-grade materials were used. If the roof is covered with composition rolled roofing or composition shingles it is difficult to tell what ply (thickness) of roofing material was used. The reputation of the roofing contractor is the best check on the quality of the roof.

B. *Interior Items*

39. *Floor Levelness:* Houses have been built with floors which are not level. Some people are sensitive enough to *feel* that the floor rises or drops down as they walk over it. The easiest test is to put a marble on the floor. If it rolls the floor is not level, indicating poor craftsmanship.

40. *Floor Rigidity:* Go to the center of each room in the house and jump a time or two. Vibrations will be noticed if the supporting members (called underpinning) are not resting solidly on the concrete piers. Vibration means careless construction.

41. *Door and Window Fitting:* How do the doors fit? Are the cracks around each of them parallel and not too large? Cracks that are large or unparallel indicate poor craftsmanship. And do the doors and windows (if hinged) *stay put* when partially open? If they do not remain in an open position then the wall is out of plumb.

42. *Finish Joints:* Each corner in the profile surface of a molding or molded casing should align perfectly on all 45-degree angle joints. Finish joints cannot always be checked, however, as a good painter will fill open joints with putty. Baseboard should fit tight to the wall; cracks behind the baseboard indicate a poor job of plastering or of "grounding" in preparation for plastering.

43. *Drawers:* How do the drawers *run* or slide? Careful workmanship will provide smooth running drawers irrespective of their size. Wide drawers should have two pulls and should operate smoothly even if the drawer is opened by only one of the pulls.

44. *Drainboard Pitch:* Drainboards *have* been constructed allowing the water to run away from instead of into the sink! The marble test is easily applied to see in which direction it rolls.

45. *Hardware:* There are three kinds available: plated, plastic, and solid. The solid brass or bronze hardware is by far the best but costs more. Solid hardware is *thicker;* a close check of some of the hardware items in which the edges are exposed will show this thickness. If the hardware appears thin then it is either plated or plastic.

Front doors should have three hinges; wide drawers two pulls. If casement sash are used and swing in, then a specially wide hinge should be used (called a parliament butt) to provide window shade clearance when the sash is opened against the wall.

46. *Plastering:* All inside angles should be protected by a metal corner which serves as a guide for the plasterer. The face of this metal corner usually can be seen as a small ⅛-in. quarter circle of metal extending from floor to ceiling or around the edges of an archway. On a new house there should be no plaster cracks and the plaster finish coat should be well done. All angles should be straight and square. Anyone with a good *eye* can tell whether the angles between the walls and ceilings are straight.

47. *Plumbing Fixtures:* What about the quality of the plumbing fixtures? Such names as Crane, Kohler, Standard, or Eljer are bywords of quality in the plumbing industry. The manufacturer's name usually is stamped on the fixture.

48. *Hardwood Floor Quality:* This will vary in appearance and thickness. An even color indicates first quality lumber; dark streaks and short pieces mean lower quality. The thickness is harder to determine and may require a question of the builder. Flooring thickness varies from ⅜ to ¾ in. The thicker the flooring the better it will wear.

49. *Linoleum:* A new house will usually include linoleum on the kitchen floor and sometimes in the bathroom. The best quality linoleum will be inlaid, the cheaper quality will be printed. To determine which has been used ask the builder. Asphalt tile is also becoming quite popular and is very durable.

50. *Window Cleaning:* Some builders will clean all window glass at the completion of the job; others will leave this for the owner to do. An inspection of the glass will indicate whether or not all paint spots have been removed.

IV. The Check List

As an aid in judging the houses the following check list covers all items previously described. Each item has been numbered for easy identification with the written description.

I. The Location and Neighborhood

1. Proximity
2. Public services
3. Drainage
4. Street improvements
5. Transportation
6. Neighborhood

II. The General Appointments

A. *Exterior Appointments*

7. Garage
8. Gutters and downspouts
9. Lawn sprinkler system
10. Water shutoff and hose bibs
11. Ground Improvements and Planting

B. *Interior Appointments*

12. Basement
13. Windows
14. Doors
15. Closets
16. Linen closet
17. Cabinets
18. Bathrooms
19. Shower facilities
20. Double sink
21. Lavatory mixing faucet
22. Hot water heater
23. Electrical items
    - *a*) Outside light
    - *b*) Sink light
    - *c*) Outlets
    - *d*) Doorbells
24. Tilework
25. Insulation
26. Heating
27. Laundry facilities
28. Miscellaneous items

III. The Quality of Construction

A. *Exterior Items*

29. Depth of foundation
30. Steps and risers
31. Cement porch floor height
32. Ventilators in foundation and attic
33. Cleanouts
    a) Plumbing
    b) Fireplace
    c) Chimneys
34. Quality of lumber
35. Size of ceiling joists and bracing of roof
36. Garage doors
37. Plastering
38. Roofing

B. *Interior Items*

39. Floor levelness
40. Floor rigidity
41. Door and window fitting
42. Finish joints
43. Drawers
44. Drainboard pitch
45. Hardware
46. Plastering
47. Plumbing fixtures
48. Hardwood floor quality
49. Linoleum
50. Window cleaning

Planning The Projects Exhibit

ABRAM HILL
Machine Shop Instructor
Edward Bok Vocational-Technical School
Philadelphia, Pa.

In January, 1948, the Edward Bok Vocational-Technical School, 8th & Mifflin Streets, Philadelphia, celebrated its tenth anniversary of service to the community and the country.

In commemoration of this anniversary an elaborate program was planned, the high light of which was a three-day display of activities and open house. During this time the school was open to all who were interested in the great future of vocational training. Parents, alumni, former trainees, invited guests, industrial and educational leaders, interested citizens, and onlookers milled through the corridors inspecting the *live* exhibits, shop operations, and vocational classes.

Many and varied programs featuring activities of the school were held in the auditorium. The band and glee club made several appearances, community night was in honor of the people of the neighborhood, the Junior Town Meeting of the Air appeared on the stage, and ten-year and special service awards were presented to faculty members. Bok, formerly an infant in the school system, had come of age.

It had long since outgrown its main building at 8th & Mifflin Streets, and now extended to several annexes, used principally for the Veterans Training Program. In the main building and the annexes there were at that time almost two thousand veterans in training. And to show these trainees in action, a spectacular *live operations* display was set up in the girls' gymnasium.

It was the writer's responsibility to develop and organize a display that was to represent his annex during the three-day open house exhibition. We were assigned space in the gymnasium (not unlike a county fair) to display our activity to the best advantage.

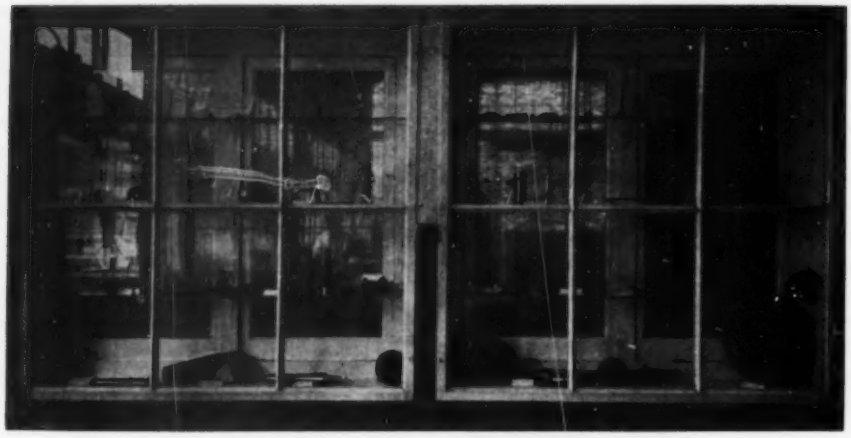
To set up and operate a *live* exhibit of machine-shop work in a gymnasium immediately presented a problem. Several questions at once arose: What should we display? What kind of activity would be appropriate? Could we have machines in operation, and if so what could we do with the machines? What could we make? How could we dispose of the product? These questions and many more were faced and answered before the exhibition was over.

Our assigned space in the gymnasium was approximately 16 feet long and 10 feet deep, a desirable spot, with heat, light, and power furnished. This space was to be used to our best advantage. We used a piece of plywood 4 by 8 feet, set upright lengthwise, about 2 feet above the floor and tipped at an angle to form the background at rear of booth. Upon this board we mounted, with fine wire, about fifty pieces of work that had been machined in our shop. These exhibit pieces were of various sizes and degrees of complexity, from simple blocks to long, multiple-thread lead screws. Each piece was appropriately marked with neat cardboard tag.

Maintenance work is one feature of training in our shop, so we exhibited one small hand screw machine in process of being overhauled and rebuilt. As the visitors had no way of knowing what the annex was like, we asked the photography department to make several photographs showing our building inside and outside. These photographs we had enlarged to 18 by 22 inches, mounted them upon heavy cardboard, and placed them upon the walls of our booth. They looked nice and drew many favorable comments from the visitors.

This was all very interesting, but we wanted something *alive*, some activity, someone at work. We discarded several suggestions, and finally decided to make a souvenir of the occasion and give it to the visitors. The souvenir was a small aluminum rod with red rubber eraser inserted in one end, and with the letters BOK in school colors of white and blue pasted upon the side. These erasers were to be made at the exhibition and given to visitors as they entered our booth.

We moved a 13-inch engine lathe into the booth, equipped it with spring collet draw-in attachment and tool post turret to enable us to turn out the souvenirs at one setting of the machine; and at a rapid rate. Two trainees operated the machine, one doing the actual operating, and the other pasting on the letters, inserting the



Display window, Bok Vocational School Annex

rubber tip, and giving the souvenirs to the visitors.

To encourage visitors to walk through the booth we placed the lathe near the main aisle, but with the operator's back to the aisle. To see just what the operator was doing it was necessary for visitors to walk through the opening to the right of the machine and into the booth. They then had an opportunity to see all of our exhibits at close range, receive a souvenir, and pass out the other end of the booth.

Several thousand souvenirs were given out to visitors (a sizable supply of them had been made up before the exhibit opened) and we felt that our display was a success. Later we received letters from the co-ordinator in charge of the exhibits, and from W. E. Brunton, principal of the Bok school, confirming our own opinion of our exhibit.

At the close of the exhibition we moved all material back to the annex. There we faced another question: What to do with the material and exhibit pieces? Where to put them? Shall we dispose of them? The exhibit was too successful to forget, yet we had no place to keep or display our work.

In the annex there is a partition between the entrance hall and the main workshop. In this partition there was a steel-sash glass window approximately 4 feet high and 8 feet wide. This partition is about 6 inches thick, with the steel-sash window flush on the entrance hall side. This fact permitted us to have the cabinetmaking class of trainees at Bok Vocational School build a show window with a depth of 5 inches, simply by mounting glass doors flush with the shop side of the partition. Three plate glass shelves, a neat paint job by trainees of the painting classes, and appropriate hardware completed the project. We now had a neat display case, or show window 8 feet wide, 4 feet high, and about 5 inches deep, with glass front and rear.

Upon the plate glass shelves we placed selected pieces of work from the Tenth Anniversary Exhibit. Small white cards were added stating the name of the article and of the trainee who made it. Each trainee whose name appeared on a project seemed well pleased, but within a short time the need of changes was apparent; new jobs were being completed by trainees whose names did not appear in the original exhibits. A rotation plan soon evolved. No project stayed in the show window very long, only until we could find a new one more attractive or better made. New jobs and new names since that time have appeared regularly in our display window. Competition is often keen, and many trainees are very sensitive to work displayed; and many do not hesitate to show great satisfaction when their completed jobs are put on display. Most *live* jobs made for other shops or departments usually are displayed a few days (time permitting) in our display window. This practice of rotation, of constantly changing our show windows gives all trainees on the three shifts an opportunity to see what is being accomplished by their fellow students.

Officials and visitors never hesitate to stop for a moment to look at an exhibition of our projects, for it is never the same from day to day, but constantly changing. Of course some jobs do remain on display longer than others, due to their exceptional workmanship or our inability to obtain a better or more interesting replacement.

Our show window also serves as a place for special displays. Here we always put for a short time such items as group pictures taken on a field trip, letters from graduates and former students, prizes offered for special events, and news of high interest. Recently our coming Christmas party was advertised by a picture of a nurses' chorus in uniform that was to sing carols at the party. A few days later, prizes to be awarded at the party were displayed to advantage upon the plate glass shelves. One summer our team won the Directors Award for the Championship in the Veterans Soft Ball League. The trophy, a bronze plaque with appropriate inscription, was prominently and proudly displayed in the show window, along with the soft ball used in the last pennant-winning game. This ball, autographed by members of the team, coaches and instructors, is still on display, but the trophy? Oh, that was kept for one year, then lost to a better team.

In addition to our projects we proudly display, we have not forgotten the men who made the show window a success. Near by in a glass frame hangs a beautifully hand engraved and appropriately lettered parchment scroll containing the names of all graduates, many preceded by stars, a red star for outstanding attendance, and a blue star for outstanding workmanship. Ample space is provided for additional names and new ones are added as each trainee completes the required work.

Keeping the show window alive and constantly changing is a big job, requiring a lot of time and thought, but the interest it creates and the inspiration it gives to the trainees bring the writer a great personal satisfaction.

* * *

Ninety-nine per cent of all locomotives ordered by U. S. railroads in 1950 were diesel-powered.

* * *

Only 6 per cent of the world's population lives in the United States. Yet 75 per cent of all the automobiles in the world are in this country. This is an excellent example of the high standard of living in a nation with a progressive and competitive economy.

Industrial Arts and Vocational Education
John J. Metz, *Editor*

HOW CIVIC MINDED ARE WE?

A newspaper item recently told a story about a farmer whose land runs along a highway, who placed a stuffed pheasant on a pile of logs in his field about one hundred feet from the fence. He fastened the bird firmly to the logs wondering what the outcome would be, now that the hunting season had opened.

Then he retired to his house to watch developments. In most cases, and there were about two hundred of them, the hunters stopped their cars, jumped out and blazed away at the stuffed bird. Only two hunters came to the house to ask permission to hunt on the farmer's land. The rest violated three laws of the state in which this happened, namely, shooting from the highway, shooting on private property without first getting permission, and carrying loaded guns in their cars.

Many of the hunters banged away several times at the bird, and some climbed the fence to find out why the bird did not fall when it was hit. Some were quite angry when they found out that they had been duped.

A good story to use when speaking to the students about sportsmanship, obeying laws, civic responsibilities, etc. A good reminder also for each one of us. It takes a strong will to resist any kind of temptation when a good opportunity to break a law presents itself.

Being prepared beforehand to resist such temptations will help both student and teacher.

TELEVISION AND THE SHOP TEACHER

The writer attended a meeting a short while ago at which a schoolman and two businessmen defended the question of reserving a certain TV channel for the schools against three men from the television industry who maintained that the channel in question be turned over to the commercial TV station operators who would then apportion 15 per cent of their time gratis to the use of the schools. These TV men painted quite a lurid picture of how much the school-operated TV would cost the taxpayer, and from their talk the word *taxpayer* evidently was to be set in bold faced caps to scare the citizens. Furthermore, they maintained that the schoolmen did not possess the training and skill to analyze what they wanted to demonstrate to their audience. These defenders of the commercial TV evidently had never heard of the demonstrations teachers of industrial arts and vocational education have to put on before their classes. As a matter of fact, they never mentioned the word *demonstration* — to them it was putting on a show.

A week after that debate, the writer had the pleasure of attending a trial performance of a "Walt's Workshop" TV skit put on by his friend, Walter Durbahn, supervisor of industrial arts and vocational education of Highland Park, Ill. If these commercial TV men had seen this performance put on by one of our shop teachers, they might have had a higher opinion of what teachers can do. Probably they are not so naïve as they seem, rather, they may think the people who come to hear them defend the sacred rights of the commercial TV operators are the naïve listeners who will silently sit by while education is robbed of an opportunity to control and freely use the most modern electronic device in the service of educating the youths and adults of our country.

GET ACQUAINTED WITH YOUR BOYS

A recent number of the *Morton Messenger* published by the Morton Printing Company, Pontiac, Ill., carried a short story that contains a valuable thought which may find application by students and teachers alike.

A certain member of a service club was asked to address his luncheon group. As is usual the assigned speaker was given his own choice of subject, and after casting about for an idea for some time, he decided to list the names of all the members, and then write after each name one reason that made him like this particular member.

The day of the luncheon arrived and the speaker, who by that time had become somewhat jittery about the success of his idea, gave his address. After he had finished he received quite a number of favorable comments and congratulations on his novel presentation.

A few days later, arriving at his desk, he was surprised to find a small note from each of the members who had been at the luncheon meeting telling him what particular trait they admired in him.

No doubt when he prepared his talk it took quite a bit of effort to analyze each separate member and make a truthful statement about him. And undoubtedly, after going through this work, he was much better acquainted with each member. What is more the reaction of the members showed that they, too, were better acquainted with him.

Would the experiences of the speaker and the members whom he addressed have any implications for the shop instructor and his students? Would this method get teacher and pupil better acquainted? Would it be worth while to try it out?

SEASON'S GREETINGS

With war production in full swing; with our boys being inducted, trained, and sent to the battle fields; with unrest, suspicion, and distrust everywhere; with crime on the increase, both among youths and adults; it is difficult to develop the old-time holiday spirit. The Christmas season, however, is not merely a time for jollification — it also is a time for trustful prayer — prayer for peace, prayer for better understanding between nations, prayer for those who are now suffering on the battle fields, and prayer for those who already have or are about to lose loved ones in the unholy slaughter that is going on in various parts of the world.

If the contemplation of the sad picture presented by the world dampens the feeling which this season ought to instill in us, proper prayer may bring quiet and peace into our hearts and help us bear up under our present troubles.

Bearing this in mind, INDUSTRIAL ARTS AND VOCATIONAL EDUCATION wishes its readers and friends peace of mind and soul for Christmas and the new year.

* * *

The American petroleum industry, under the spur of competitive enterprise and private ownership, has outdistanced Russian oil production eight to one.

DETROIT PUBLIC LIBRARY

FREE RELATED SUBJECTS MATERIALS FOR INDUSTRIAL EDUCATION

COMPILED BY ERNST H. SUERKEN
Supervising Principal
Union Free School District,
Greenburgh No. 11
Dobbs Ferry, N. Y.

The following list of related subjects materials was collated to help teachers of industrial arts and vocational education.

When writing for these materials it is well to use school stationery. Sufficient postage also should be enclosed to cover mailing charges.

All items are free unless otherwise noted. A nominal charge may be made when free items are ordered in quantities.

Part One: Construction, Methods, and Materials

California Redwood Assoc., 405 Montgomery St., San Francisco, 4, Calif.
Redwood Vacation Homes

Copper and Brass Research Assoc., 420 Lexington Ave., New York 17, N. Y.
Your Dream Home

Department of Agriculture, Forest Products Laboratory, Madison 5, Wis.
The Rigidity and Strength of Frame Walls (*R 896*)
Practical Suggestions on Frame House Construction (*R 991*)

Douglas Fir Plywood Assoc., Tacoma Bldg., Tacoma 2, Wash.
Douglas Fir Plywood, Architectural Catalog
Dri-Bilt with Plywood

Federal Housing Administration, Washington 25, D. C.
(The FHA has some publications that may be secured on request from local insuring office having jurisdiction with particular area concerned.)

Gypsum Association, 20 N. Wacker Drive, Chicago 6, Ill.
Fireproof Gypsum Wall Board
Fireproof Gypsum Sheathing
Fireproof Gypsum Lath

Louisiana State University, Engineering Experiment Station, Baton Rouge, La.
How to Build a House of Concrete Masonry

Metal Lath Manufacturers Assoc., Engineers Bldg., Cleveland 14, Ohio
Metal Lath Specifications for Metal Lathing and Furring
Summary of Metal Lath and Plaster Fire Resistive Ratings
Technical Data Sheet Binder

National Fire Protection Assoc., 60 Batterymarch St., Boston 10, Mass.
Build a Fire Safe Home — $2 per hundred

National Lumber Manufacturers Assoc., 1319 — 18th St. N.W., Washington 6, D. C.*
Wood Framing — The Backbone of your New Home
Plank and Beam Floor and Roof System
Manual on Sheathing for Buildings
Wood Wall Sheathing — Strength and Insulation for the Skeleton of your Home
Wood Siding — A Many Textured Overcoat for your New Home

Porcelain Enamel Institute, 1010 Vermont Ave. N.W., Washington 5, D. C.
Architectural Porcelain Enamel

Portland Cement Assoc., 33 West Grand Ave., Chicago 10, Ill.
Handbook on Farm Construction
Why People Like Concrete Houses

Red Shingle Bureau, 5510 White Bldg., Seattle, Wash.
Shingle Homes Booklet — 10 cents

Southern Pine Assoc., Canal Bldg., New Orleans 4, La.
The Way to Build the House to Last
Lumber and Millwork
Make It Yourself (three leaflets)
Principles of Frame Construction (miniature chart)

U. S. Department of Agriculture, Division of Information, Washington 25, D. C.
Waterproofing Concrete and Other Masonry Walls Above Ground (Inform. Series 75)
Your Farmhouse — How to Plan Remodeling (*M 619*)
Farmhouse Plans for Northeastern States M 658 (Series 80)
Farmhouse Plans F 1738

U. S. Department of Interior, National Park Service, Washington 25, D. C.
(The following booklets are for sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C.)
Reprints from "Park and Recreation Structures" —
Bathhouses and Dependencies — Catalog No. 129.2/a:B32 — 15 cents
Boathouses and Dependencies — Catalog No. 129.2/a:B63 — 10 cents
Cabins — Catalog No. 129.2/a:C111/1-3 — 20 cents
Camp Furniture and Furnishings — Catalog No. 129.2/a:C15/2-2 — 10 cents
Concessions and Refectories — Catalog No. 129.2/a:C744 — 10 cents
Lodges, Inns, and Hotels — Catalog No. 129.2/a:L821 — 15 cents
Miscellaneous Sports Structures — Catalog No. 129.2/a:Sp67 — 10 cents
Organized Camp Facilities — Catalog No. 129.2/a:C15/1-2 — 40 cents
Picnic Fireplaces — Catalog No. 129.2/a:P587/1-2 — 10 cents
Tent and Trailer Campsites — Catalog No. 129.2/a:C158/1-2 — 10 cents

West Coast Lumberman's Assoc., 1410 S. W. Morrison St., Portland 5, Ore.
Be Sure When You Build
How to Build Farm Buildings that Last Longer
How to Build Well and Save Money
Planning a Farm Home
Use the Right Grade of Lumber in your Home

Western Pine Assoc., 510 Yeon Bldg., Portland 4, Ore.
Fabricating the Western Pines (film) — sound-on-film, 35 min., 16mm., 1200 ft. reel
Building A Home with Western Pines (film) — sound, 25 min., 16mm. 1200 ft. reel
(Transportation charges one way, and requests for bookings should be made four to six weeks in advance.)

Part Two: Electrical, Plumbing, and Woodworking

California Redwood Assoc., 405 Montgomery St., San Francisco 4, Calif.
Redwood Vacation Homes

Copper and Brass Research Assoc., 420 Lexington Ave., New York 17, N. Y.
How to Make Your Own Screens

Douglas Fir Plywood Assoc., Tacoma Bldg., Tacoma 2, Wash.
Paneling Suggestions for Douglas Fir Plywood
Plywood Interior Finishes

Enameled Cast Iron Plumbing Fixtures Assoc., 1709 M St. N.W., Washington 6, D. C.
How to Handle Enameled Cast Iron Plumbing Fixtures

Federal Housing Administration, Washington 25, D. C.
(The FHA has some publications that may be secured on request from local insuring office having jurisdiction with particular area concerned.)

Federal Security Agency, Public Health Service, Washington 25, D. C.
Individual Sewage Disposal Systems — Reprint No. 2461
Individual Water Supply Systems — Public Health Service Publication No. 24
Public Health Report — Vol. 66, No. 34
(Single copies of the above booklets and other public health service publications free to teachers.)

Lead Industries Assoc., 420 Lexington Ave., New York 17, N. Y.
Lasting Lead Work in Modern Plumbing

National Lumber Manufacturers Assoc., 1319 — 18th St. N.W., Washington 6, D. C.*
Wood Interiors Offer an Infinite Variety of Decorative Effects

National Terazzo and Mosaic Assoc., 1420 New York Ave. N.W., Washington 5, D. C.
Safeguard Against Static Explosion Hazards
Terazzo Resiliency Tests

Plumbing and Heating Industries Bureau, 35 E. Wacker Drive, Chicago 1, Ill.
Modern Plumbing Fixtures — 5 cents
Modern Bathroom Plans — 10 cents
What You Should Know About Plumbing — 10 cents
Plumbing Care and Repair — 10 cents
How Large Should Your Bathroom Be? — 5 cents
Convenient Baths May be Planned for Economy — 5 cents
Bathroom Layouts Need Revamping — 5 cents
Hot Water — An Effective Disinfectant — 5 cents
Quality Fixtures for Today's Builders — 5 cents
Back Siphonage — 5 cents
Water Supply System for the Country House — 5 cents
What's New in Bathrooms — 5 cents
Timely Tips on Plumbing Care — 5 cents
What's New in Bath Fixtures — 5 cents
Bringing Plumbing up to Date Now — 5 cents
Spruce Up Those Bathrooms — 5 cents
Are You in Hot Water? — 5 cents
Forecast: Cooler With Showers — 5 cents
Look for Quality in Equipment — 5 cents
Water Supply Piping — 5 cents
The Importance of Correct Piping Design and Installation — 5 cents

Portland Cement Assoc., 33 West Grand Ave., Chicago 10, Ill.
Concrete Structures for Farm Water Supply and Sewage Disposal

Southern Cypress Manufacturers Assoc., 721 Barnett National Bank Bldg., Jacksonville, Fla.
An Inside Story of Tidewater Red Cypress
Tidewater Red Cypress Interiors

Southern Hardwood Producers Assoc., 805 Sterick Bldg., Memphis 3, Tenn.
Southern Hardwood Interiors

Underwriters' Laboratories, 207 E. Ohio St., Chicago 11, Ill.
Accident, Automotive, and Burglary Protection Equipment List
Electrical Equipment List
Fire Protection Equipment List
Gas and Oil Equipment List
Hazardous Location Electrical Equipment List

*No charge for single copies of the above; should write for quantity prices.

*No charge for single copies of the above; should write for quantity prices.

U. S. Department of Agriculture, Division of Information, Washington 25, D. C.
Simple Plumbing Repairs in the Home (F 1460)
Farm Plumbing (F 1426)
Sewage and Garbage Disposal (F 1950)
Selection of Lumber for Farm and Home Building (F 1756)
Use and Abuse of Wood in House Construction (M 358) — 15 cents

West Coast Lumberman's Assoc., 1410 S. W. Morrison St., Portland 5, Ore.
Beautiful Homes of Wood
Four of the World's Finest Woods
Million Homes a Year — Forever
Species Pamphlets on: Douglas Fir, Sitka Spruce, West Coast Hemlock, and Western Red Cedar Lumber

Western Pine Assoc., 510 Yeon Bldg., Portland 4, Ore.*
Plan Book for the Boy Builder — Pub. No. 24
Wood Carving for Pleasure — Pub. No. 35
Wood Turning the Home Workshop — Pub. No. 36
Facts About Ponderosa Pine — P5–2
Facts About Sugar Pine — P5–3
Facts About Idaho White Pine — P5–4
Facts About Lodgepole Pine — P5–5
Facts About White Fir — P5–6
Facts About Engelmann Spruce — P5–7
Facts About Incense Cedar — P5–8
Facts About Western Red Cedar — P5–9
Facts About Larch — P5–10
Facts About Douglas Fir — P5–11

Western Plumbing Officials Assoc., Inc., Subway Terminal Bldg., 417 So. Hill St., Los Angeles 13, Calif.
Uniform Plumbing Code — 50 cents
Standard Gas Code — 35 cents
(When ordered in quantities of 25 or more, the price is 20 cents per copy.)

Part Three: Floors, Walks, and Roofs

American Zinc Institute, 60 East 42nd St., New York 17, N. Y.
How to Make Galvanized Roofing Last Longer
Facts About Galvanized Sheets
Directions for Laying Galvanized Roofing
(When ordered in quantities, a nominal charge is made.)

Copper and Brass Research Assoc., 420 Lexington Ave., New York 17, N.Y.
The Life of Your Roof Hangs by a Nail

Gypsum Assoc., 20 N. Wacker Drive, Chicago 6, Ill.
Design Data and Load Test on Reinforced Gypsum Floors and Roofs

Lead Industries Assoc., 420 Lexington Ave., New York 17, N. Y.
Lead (published periodically)

Maple Flooring Manufacturers' Assoc., 35 East Wacker Drive, Chicago 1, Ill.
Finishing Northern Hard Maple Flooring
Six Educational Folders on Northern Hard Maple and Birch Flooring or 4-page Brochure of Technical Data on Flooring, etc.

National Lumber Manufacturers' Assoc., 1319 — 18th St. N.W., Washington 6, D. C.*
Plank and Beam Floor and Roof System
Wood Floors — Comfort and Beauty Underfoot

National Oak Flooring Manufacturers Assoc., 814 Sterick Bldg., Memphis 3, Tenn.
Home Owner's Guide to Flooring
Oak Floors for Long Time Beauty
Specification Manual for Certified Oak Floors

*Single copies available to teachers free; quantity lots available at a small fee.
*No charge for single copies of the above; should write for quantity prices.

National Terazzo and Mosaic Assoc., 1420 New York Ave. N.W., Washington 5, D. C.
Technical Data and Specifications for Terazzo and Mosaic Work
Terazzo Maintenance Bulletin
Outdoor Terazzo Bulletin
Divider Strip Location and Data Bulletin (Terazzo Floors)

Portland Cement Assoc., 33 W. Grand Ave., Chicago 10, Ill.
Concrete Improvements Around the Home

Red Shingle Bureau, 5510 White Bldg., Seattle, Wash.
Roofs and Exterior Walls of Red Cedar Shingles
Blue prints — Red Cedar Shingle Application
Certigrade Handbook (100 pages)

Southern Cypress Manufacturers Assoc., 721 Barnett National Bank Bldg., Jacksonville, Fla.
Pecky Cypress Blocks for Garden Walks

Southern Pine Assoc., Canal Bldg., New Orleans 4, La.
The Way to Build the House to Last
Lumber and Millwork
Make It Yourself (three leaflets)
Principles of Frame Construction (miniature chart)

U. S. Department of Agriculture, Division of Information, Washington 25, D. C.
Preventing Cracks in New Wood Floors (L 56)
Roof Coverings for Farm Buildings and Their Repairs (F 1751)

Part Four: Grounds

California Redwood Assoc., 405 Montgomery St., San Francisco 4, Calif.
Data Sheets on Garden Structures
Extend Your Home to All You Own
Whatever the Job
Garden Ideas Booklet — 1949, 1950, 1951

National Lime Assoc., 927 — 15th St. N.W., Washington 5, D. C.
Lime on Lawns and Flower Gardens (Bulletin 180-A)

U. S. Department of Agriculture, Division of Information, Washington 25, D. C.
Common Diseases of Important Shade Trees (F 1987)
Care of Damaged Shade Trees (F 1896)
Handbook of Insect Enemies of Flowers and Shrubs (M 626) — 45 cents
Pointers on Making Good Lawns (L 281)

Part Five: Heating and Insulation

Acoustical Materials Assoc., 205 West Monroe St., Chicago 6, Ill.
Sound Absorption Coefficients of Architectural Acoustical Materials (Bulletin XI 1949) — 25 cents
Theory and Use of Architectural Acoustical Materials — 25 cents

Copper and Brass Research Assoc., 420 Lexington Ave., New York 17, N. Y.
Radiant Heating

Douglas Fir Plywood Assoc., Tacoma Bldg., Tacoma 2, Wash.
Insulating With Plywood
Preventing Condensation in Walls and Ceilings

Underwriters' Laboratories, 207 E. Ohio St., Chicago 11, Ill.
Gas and Oil Equipment List

U. S. Department of Agriculture, Division of Information, Washington 25, D. C.
The Treatment of Sawdust Insulation for Protection Against Decay, Insects, Animals and Fire
Condensation Problems in Modern Buildings (R 1196)
Preventing Moisture in Farmhouses (Inform. Series #71)
Your Farmhouse — Insulation and Weatherproofing (M 633)

U. S. Department of Interior, Publication Section, Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.
Home Insulation With Mineral Products (Inform. Cir. 7388)
How to Save Fuel at Home (Inform. Cir. 7229)

Part Six: Masonry, Concrete and Plastering

Douglas Fir Plywood Assoc., Tacoma Bldg., Tacoma 2, Wash.
Concrete Forms of Douglas Plywood

Gypsum Assoc., 20 N. Wacker Drive, Chicago 6, Ill.
Manual of Gypsum Lathing and Plastering
Standard Specifications for Gypsum Plastering

Indiana Limestone Institute, Bedford, Ind.
Indiana Limestone, The Nation's Building Stone

Metal Lath Manufacturers Assoc., Engineers Bldg., Cleveland 14, Ohio
Metal Lath and Plaster for Beauty, Strength, Economy and Permanence

National Board of Fire Underwriters, 85 John St., New York 7, N. Y.
A Standard Ordinance for Chimney Construction

National Fire Protection Assoc., 60 Batterymarch St., Boston 10, Mass.
Make Your Chimneys Safe — $2 per hundred

National Lime Assoc., 927 — 15th St. N.W., Washington 5, D. C.
Lime Mortar — Its Relation to Water-Tight Masonry (Bulletin 320)
Masonry Mortar (Bulletin 321)

Portland Cement Assoc., 33 W. Grand Ave., Chicago 10, Ill.
A Practical Course in Concrete

U. S. Department of Agriculture, Division of Information, Washington 25, D. C.
Waterproofing Concrete and Other Masonry Walls Above Ground
Rubble Masonry (Inform. Series 54)
Plaster and Plastering (Inform. Series 32)
Use of Concrete on the Farm (F 1772)
Fireplaces and Chimneys (F 1889)
Concrete Fence Posts (Inform. Series 58)
Home Made Concrete Blocks (Inform. Series 56)

Part Seven: Paints, Painting, and Furniture Refinishing

American Zinc Institute, 60 East 42nd St., New York 17, N. Y.
Metallic Zinc Paint
(When ordered in quantities, a nominal charge is made.)

Douglas Fir Plywood Assoc., Tacoma Bldg., Tacoma 2, Wash.
Soft, Mellow Paneled Walls
Beautiful Interiors: Papering or Canvasing on Plywood
Portfolio of Plywood Built-in Features
Pace-Setter Ideas for Homes

Federal Housing Administration, Washington 25, D. C.
(The FHA has some publications that may be secured on request from local insuring office having jurisdiction with particular area concerned.)

Lead Industries Assoc., 420 Lexington Ave., New York 17, N. Y.
Lead (published periodically)
Red Lead Technical Letter
Property Protection with White Lead Paint

National Lime Assoc., 927 — 15th St. N.W., Washington 25, D. C.
Whitewash and Cold Water Paints (Bulletin 304-F)

Southern Cypress Manufacturers Assoc., 721 Barnett National Bank Bldg., Jacksonville, Fla.
How to Paint Tidewater Red Cypress

U. S. Department of Agriculture, Division of Information, Washington 25, D. C.
Behaviour of House Paints on Different Woods (R 1053)
Repainting the Paint Neglected House (R 1135)
The Preservative Treatment and Staining of Shingles (R 761)
Some Causes of Blistering and Peeling of Paint on House Siding (R 6)
When and How to Paint Farm Buildings (R 962)
Fire-Retarding Coatings (R 1280)

West Coast Lumberman's Assoc., 1410 S.W. Morrison St., Portland 5, Ore.
Good House Painting
Painting and Finishing West Coast Woods

Part Eight: Miscellaneous

American Iron and Steel Institute, 350 Fifth Ave., New York 1, N. Y.
Fire Protection Through Modern Building Codes — $2
Light Gage Steel Design Manual — $1
Building Codes and Fire Safety
Building Code Modernization:
Bulletin I — General Code Considerations
Bulletin II — Code Contents and Arrangement
Bulletin III — Building Classifications and Fire Protection
Bulletin IV — Exit Requirements
Bulletin V — Steel Regulations
Bulletin VI — Steel-Framed Wall Assemblies
Bulletin VII — Steel Piles for Foundations of Buildings
Bulletin VIII — Ventilating and Heating Ducts
Bulletin IX — Modern Steel Constructions with Fire Resistive Ceilings
Bulletin X — Exterior Walls of Buildings — Fire Resistance Requirements
Bulletin XI — Non-Combustible Construction Versus Fire Hazards

Better Business Bureau, 723 Chrysler Bldg., New York 17, N. Y.
Facts You Should Know About Buying or Building a House — 10 cents
(Can be obtained from any local Better Business Bureau)

Department of Agriculture, Forest Products Laboratory, Madison 5, Wis.
Making Log Cabins Endure (R 982)

Federal Housing Administration, Washington 25, D. C.
(The FHA has some publications that may be secured on request from local insuring office having jurisdiction with particular area concerned.)

Gypsum Assoc., 20 N. Wacker Drive, Chicago 6, Ill.
White Magic — full color — sound — 16mm. — 15 min. running time (Treats the mining and processing of gypsum from raw rock to its many uses.)
Gypsum Lathing and Plastering — full color — sound — 16mm. — 15 min. (Technical film dealing with correct methods of application and use.)
Gypsum Sheathing and Wallboard — full color — sound — 16mm. — 15 min. (Technical film dealing with correct methods of application and use.)

Louisiana State University, Engineering Experiment Station, Baton Rouge, La.
If You Must Build a Home Now Termites

Metal Lath Manufacturers Assoc., Engineers Bldg., Cleveland 14, Ohio
Metal Lath News, Solid Partition Edition
Metal Lath News, Studless Partition Edition
Metal Lath News, Hollow Partition Edition
Metal Lath News, Fire Chief's House Edition

National Board of Fire Underwriters, 85 John St., New York 7, N. Y.
Nature's Artillery (Lightning Protection)
Safeguarding the Farm Against Fire
Safeguarding the Home Against Fire
Safeguarding the Nation Against Fire

National Fire Protection Assoc., 60 Batterymarch St., Boston 10, Mass.
The Protection of Wall Openings from Fire — $2.50 per hundred
The Protection of Life and Property Against Lightning — $2.50 per hundred
There's No Place Like Home for Fire — $2 per hundred

National Lime Assoc., 927 — 15th St. N.W., Washington 5, D. C.
Lime Hints for the Home

National Lumber Manufacturers Assoc., 1319 — 18th St. N.W., Washington 6, D. C.*
Exposing the Termite

Southern Cypress Manufacturers Assoc., 721 Barnett National Bank Bldg., Jacksonville, Fla.
Tidewater Red Cypress Repels Termite Attack

Steel Kitchen Cabinet Institute, 140 Public Square, Cleveland 14, Ohio
Approved Standard Architectural Dimensions for Steel Kitchen Cabinets
Quality Standards for Steel Kitchen Cabinets

Underwriters' Laboratories, Inc., 207 East Ohio St., Chicago 11, Ill.
Testing for Safety (pamphlet describing organization, purposes, and methods of Underwriters' Laboratories, Inc.)

U. S. Dept. of Agriculture, Division of Information, Washington 25, D. C.
Closets and Storage Space (F 1865)
Decay and Termite Damage in Houses (F 1993)
If You're Thinking of a Little Place in the Country (IS. 14)
Some Questions and Answers on Where and How to Get a Farm (IS. 19)
Protection of Log Cabins, Rustic and Unseasoned Wood from Injurious Insects (F 1582)
Reduction of Decay Hazard in Basementless Houses on Wet Sites (Forest Pathology Spec. Release #30)
Prevention and Control of Decay in Buildings (Forest Pathology Tech. Note #251)
A Step Saving U Kitchen (M 646)

*No charge for single copies of the above; should write for quantity prices.

PROBLEMS AND PROJECTS

MODERN COFFEE TABLE

STEWART G. BELKNAP
Industrial Arts Instructor
Hillhouse High School
New Haven, Conn.

This modern coffee table offers a challenge to the high school student, vocational student, or home craftsman. It is a problem in compound miters and cutting angles that demands accuracy to insure satisfactory results. The individual creativeness of the student can be fostered by encouraging him to construct his own design for the ornamental work under the glass.

PLAN OF PROCEDURE

Part I. Sides and Ends

1. Cut sides and ends to size leaving enough stock for sanding.
2. Set circular saw for compound miter of 30 deg. Set table for 37¾ deg. and miter gauge at 63½ deg.
3. Saw two scrap pieces and test for squareness.
4. Cut compound miter on all four pieces.
5. Set saw table at 30 deg. and cut angle required on the top and bottom of the four pieces.
6. Cut ¼-in. groove for glass housing.
7. Sand ends of miters carefully.

Part II. Legs

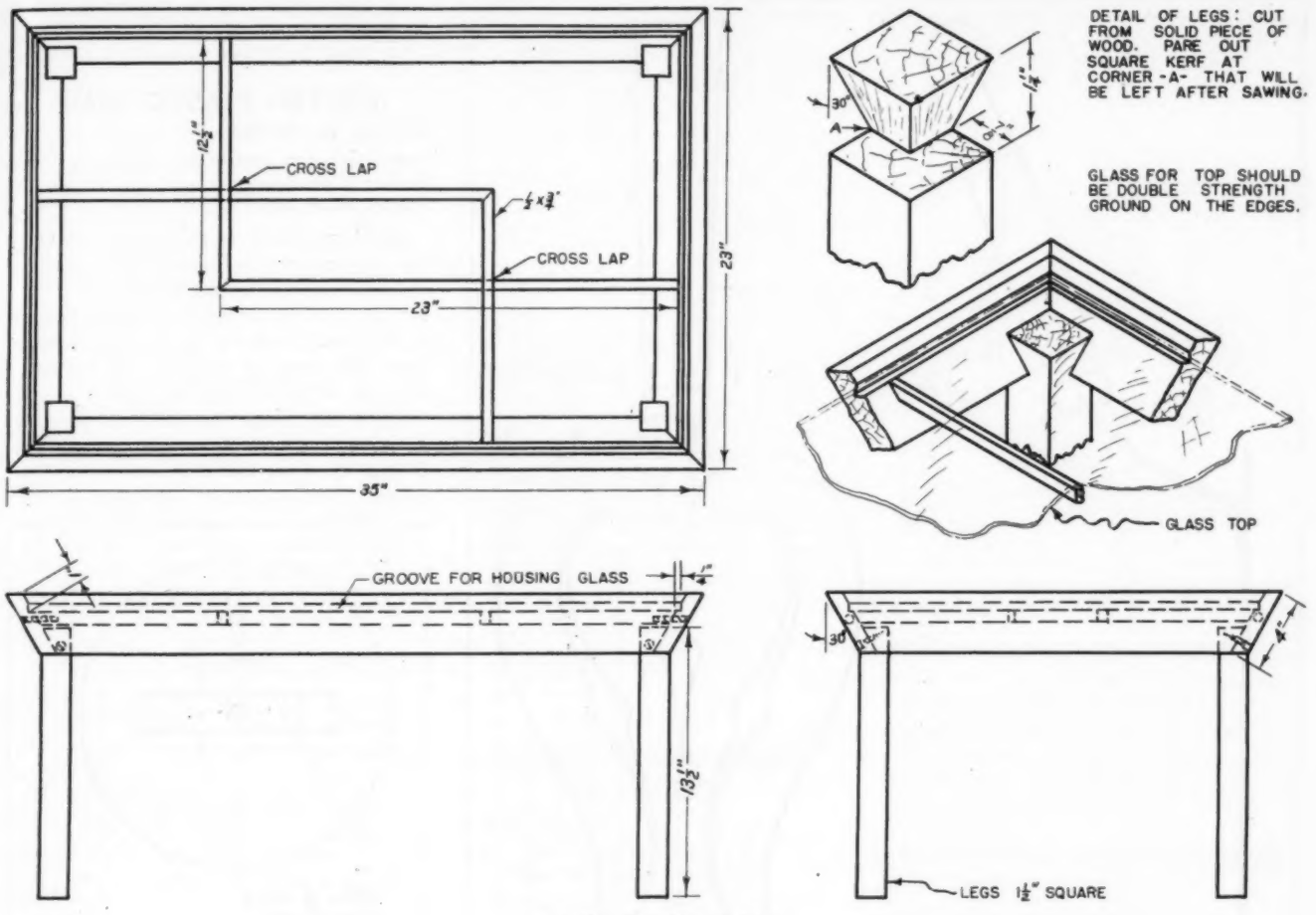
1. Cut all four legs to size.
2. Make the 90-deg. cut on two sides of the legs.
3. Re-set table at 30 deg. and cut the angle on the same sides as in No. 2.
4. Pare out kerf in the corners of joint.
5. Sand joint carefully.

Part III. Assembly — Legs to Sides

1. Clamp one side in a vise upside down.
2. Fasten one leg in position, locate and bore anchor hole using No. 3 bit.
3. Remove leg and bore pilot hole in side with No. 6 bit.
4. Counterbore ¼ in. deep to accommodate No. 9 by 1¼-in. f.h. screw.
5. Glue joint, then screw leg into position.
6. Assemble other legs in the same manner.

Part IV. Assembly — Ends to Sides

1. Compose entire table upside down on bench top, holding it by nailing scrap pieces of wood to the bench at each corner.
2. Locate and bore holes for ¼-in. dowels through the *ends* of the table. Spiral dowels are recommended.
3. Glue mitered surface and dowels and assemble.


CROSS LAP
CROSS LAP
23"
35"
DETAIL OF LEGS: CUT FROM SOLID PIECE OF WOOD. PARE OUT SQUARE KERF AT CORNER -A- THAT WILL BE LEFT AFTER SAWING.
GLASS FOR TOP SHOULD BE DOUBLE STRENGTH GROUND ON THE EDGES.
GLASS TOP
GROOVE FOR HOUSING GLASS
LEGS 1½" SQUARE

Details of coffee table

4. Using scrap blocks of wood cut at 30-deg. angles. Clamp corners with cabinet clamps.

5. Adjust clamps until table is square and joints are snug.

6. Glue ¼-in. plugs in screw holes.

7. Wipe off surplus glue and allow 24 hours to dry.

Part V. Finishing

1. Cut excess stock from plugs and dowels and sand entire project.

2. Construct ornamental work for the center of the table and tack into place with small finishing nails.

3. Apply wash coat of shellac and sand.

4. Apply coat of varnish and sand with fine abrasive.

5. Apply second coat of varnish and rub with proper rubbing compound.

NOTE: Glass for top is ordered after project is assembled to insure a proper fit.

BILL OF MATERIALS

No. of pcs.	*Name*	*Material*	*Size*
2	Sides	Hard maple	¾ x 4 x 35 in.
2	Ends	Hard maple	¾ x 4 x 23 in.
4	Legs	Hard maple	1½ x 1½ x 13½ in.
2	Ornamental A	Hard maple	½ x ¾ x 23 in.
2	Ornamental B	Hard maple	½ x ¾ x 11 in.
4	Screws		No. 9 x 1¼ in. f.h.
4	Dowels	Birch (spiral groove)	¼ in. d. by 2 in.
1	Glass (double strength)		20¼ x 32¼ in.

Cake server

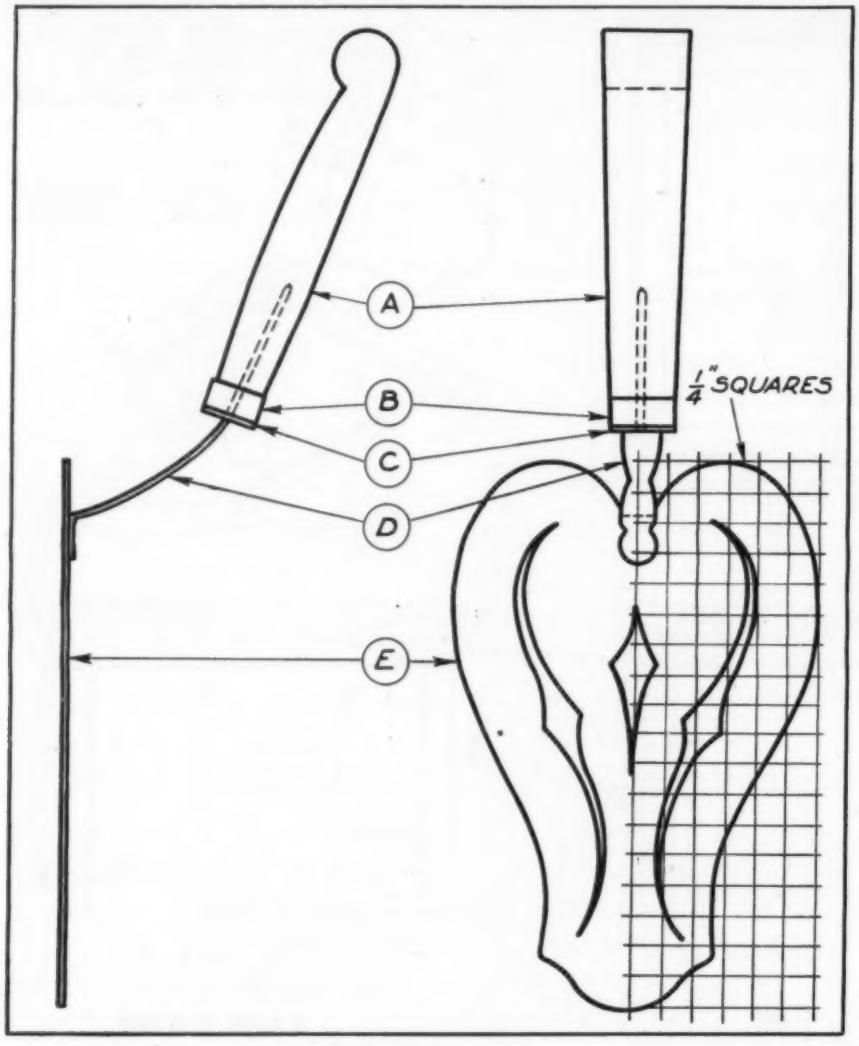
CAKE SERVER

RICHARD L. SWEITZER
Head, Industrial Arts Department
Susquehannock High School
Glen Rock, Pa.

This German silver pie or cake server offers quite a challenge to the student of art metal. Not only does it require good design and craftsmanship, but it also offers the student an opportunity to work with one of the semi-precious metals in which a different type of soldering is used. In this project the parts are joined together by means of "hard" or silver solder. This method of soldering, although rather difficult for the beginner, has many advantages. Not only does it make a stronger joint, but it also blends in color with the remainder of the project and thereby not making the soldered joint quite so obvious in appearance.

Tools

Jeweler's saw and blades, small jeweler's vise, set of needle files, silver soldering equipment.



Details of cake server

BILL OF MATERIALS

Part No.	No. of pcs.	Name	Material	Size
A	1	Handle	Walnut	3½ by ¾ x ½ in.
B	1	Ferrule	German silver	16 ga. x 9/16 x 2¾ in.
C	1	End plate	German silver	16 ga. x 9/16 x 9/16 in.
D	1	Handle	German silver	16 ga. x 3 x ⅜ in.
E	1	Server	German silver	16 ga. x 4¼ x 3 in.

Procedure

1. Design a pattern for server "E" and glue the pattern to the metal.

2. Using jeweler's saw, saw the outside portion of pattern from metal supplied by instructor.

3. Drill small holes into section of inner portions to be removed so that saw blades will fit into the holes and internal metal may be removed.

4. Saw out all internal parts of metal.

5. Cut ferrule, end plate, and handle, parts "B," "C," and "D" respectively from metal supplied by instructor.

6. Bend ferrule "B" to required shape on a sheet-metal stake.

7. Silver solder end plate "C" and ferrule "B" together.

8. Drill hole in end plate "C" just large enough for the protruding end of handle "D" to pass through. This protruding end goes into the wood handle.

9. Silver solder handle "D" into end plate "C"; also solder server "E" and handle "D" together.

10. Fashion wood handle "A" with a pocket knife or turn one out on the lathe.

11. Drill small hole in wood handle "A" just large enough for protruding end of metal handle "D." Insert metal handle into wood handle.

12. Cut away part of wood handle with knife so that it fits snug into the ferrule.

13. Use needle files to remove all large file marks.

14. Polish, buff, and lacquer.

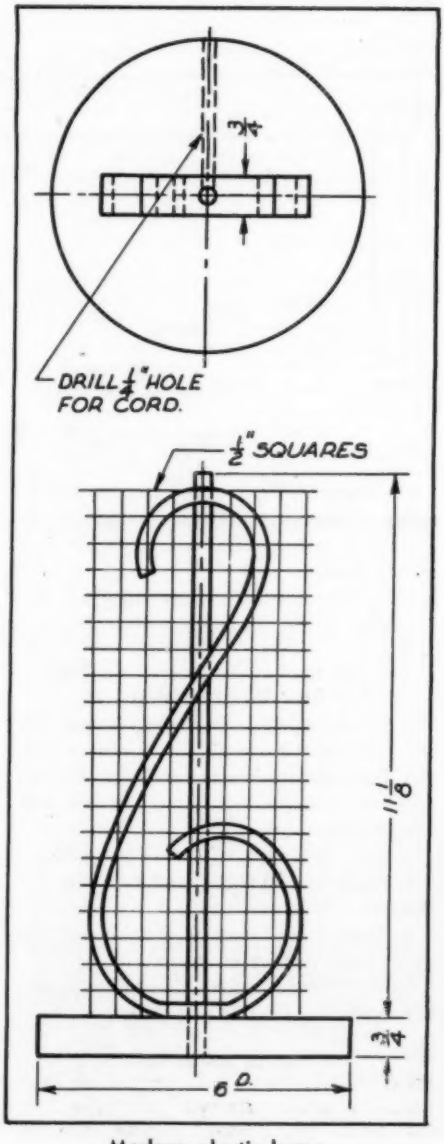
MODERN PLASTIC LAMP

ALFRED W. HOBBS
Industrial Arts Instructor
Senior High School
Poplar Bluff, Mo.

The lamp shown in this article makes a fine project for the general shop since it involves work in several areas.

When making the lamp a full-size pattern of the scroll is drawn on a piece of scrap wood. The scroll is then cut out leaving a mold in which to form the plastic.

The holes through the scroll are made by clamping the scroll between two boards and drilling the three holes at one time. This assures alignment of all four holes.



Modern plastic lamp

When fitting the socket on the copper tube the threads are drilled from the socket so that the socket will slip over the copper tube. The socket is then held in place by the setscrew in the socket.

After finishing the base and wiring the lamp the copper tube is glued into the base.

BILL OF MATERIALS

No. of pcs.	*Material*	*Size*
1	Any hardwood	¾ by 6 in. dia.
1	Clear or colored plastic	¼ x ¾ x 24 in.
1	Copper tube	⅜ x 11⅛ in.
1	Light socket	
6	Lamp cord	
1	Plug for cord	

Method of Procedure

1. Lay out and cut form for bending scroll.
2. Cut strip of plastic; sand edges and buff.
3. Heat plastic and bend into form.
4. Lay out center line for tubing; clamp scroll between two boards and drill holes.
5. Cut copper tube to correct length.
6. Polish copper tube and lacquer to prevent tarnishing.
7. Turn base to correct size; sand smooth and drill center hole for cord.
8. Finish base with stain and varnish.
9. Assemble lamp and glue copper tubing into base.
10. Drill the threads from socket so that it will slip over ⅜-in. copper tube, and fasten socket to copper tube with setscrew.
11. Wire lamp parts and select a suitable shade.

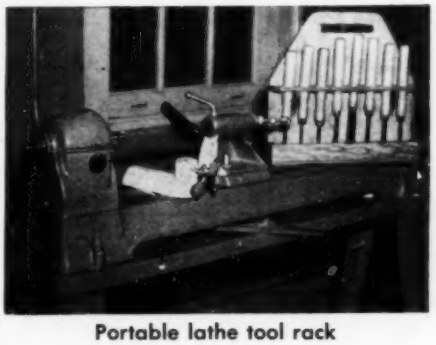
LATHE TOOL RACK

CHARLES C. HUNT and E. RICHMOND
Grand Rapids, Mich.

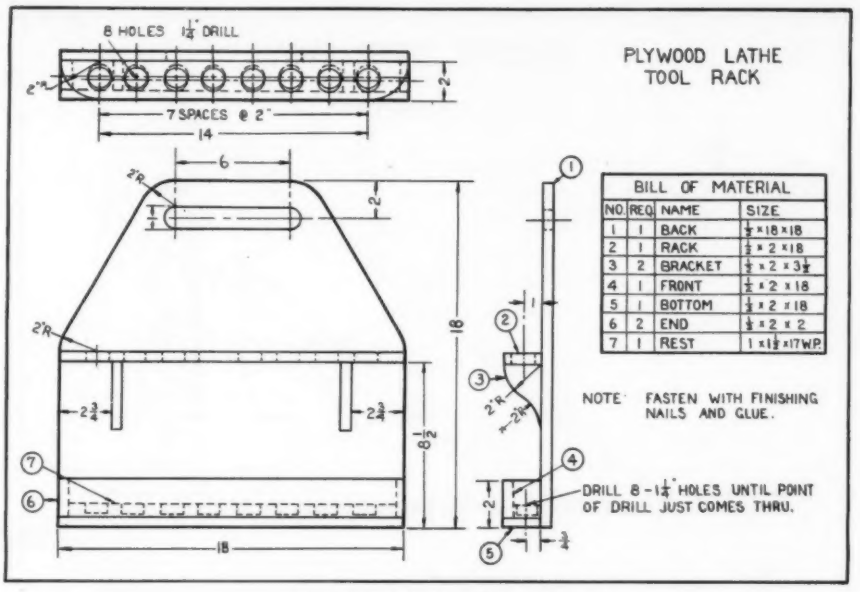
The lathe toolholder described herein, has proved to be an indispensable accessory for the wood turning lathe.

It offers advantages in easy portability, quick checking of missing tools, and keeps the tools much sharper than if stored by other methods.

While in use, the holder can be placed on the lathe bed as shown, or it may be placed on a special strap iron rack attached to the lathe bed in such a manner that the holder can be easily detached for storage in the toolroom.



Portable lathe tool rack


8 HOLES 1¼" DRILL
7 SPACES @ 2"
14
6
18
18
PLYWOOD LATHE TOOL RACK
BILL OF MATERIAL
NO. REQ. NAME SIZE
1 1 BACK ¼ x 18 x 18
2 1 RACK ½ x 2 x 18
3 2 BRACKET ½ x 2 x 3½
4 1 FRONT ½ x 2 x 18
5 1 BOTTOM ¼ x 2 x 18
6 2 END ½ x 2 x 2
7 1 REST 1 x 1½ x 17 WP
NOTE: FASTEN WITH FINISHING NAILS AND GLUE.
DRILL 8 - 1¼" HOLES UNTIL POINT OF DRILL JUST COMES THRU.

Details of lathe tool rack

ARCHITECTURAL MODEL OF SCHOOL

GEORGE HANEY
Science and Shop Teacher
Marshallton School
Marshallton, Del.

The picture of the model of Marshallton School, Marshallton, Del., shows the landscaping as it was done by Tommy Lawrence, Fred Burns, and Bobby Samworth of the eighth grade. They have just completed a unit in landscaping in their general science class.

The model of the building itself was made to a scale of ⅛ in. to 1 in. by Norman Gregg, a ninth-grade student in manual training, who has just completed a unit in architecture.

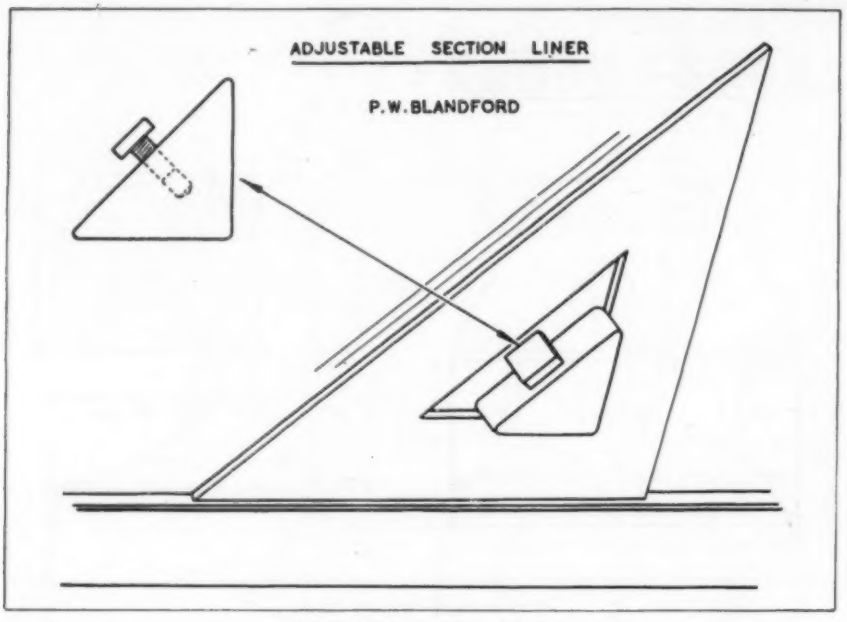
The complete project is to represent how general science and industrial arts can become a practical part of living.

Model of Marshallton school

ADJUSTABLE SECTION LINER

P. W. BLANDFORD
Gibbons Secondary School
Willesden, London, England

This little drawing aid insures accurately spaced section lines. It is simple to construct and can be adjusted to give any desired spacing. The standard drawing triangle is not altered or affected in any way. In use the



Adjustable section liner

block and triangle are moved along the straightedge alternately and a section line drawn each time. Spacing is controlled by the square-headed screw.

The block may be made of wood, but it will be cleaner and more attractive if made of plastic. If it is polished all over, movement will be facilitated if a hollow for the finger is worked in the top surface.

The screw is any available size with a fairly fine pitched thread. It may be turned from square rod, or a piece of ⅛-in. brass can be soldered to the head of a standard screw. The distance across the flats should be the same as the thickness of the block. The action of holding the block against the paper will then prevent the screw turning and affecting the spacing.

CLOTH OR FELT COVERED SANDING BLOCK

W. H. WININGER
Industrial Arts Instructor
Junior High School
High Point, N. C.

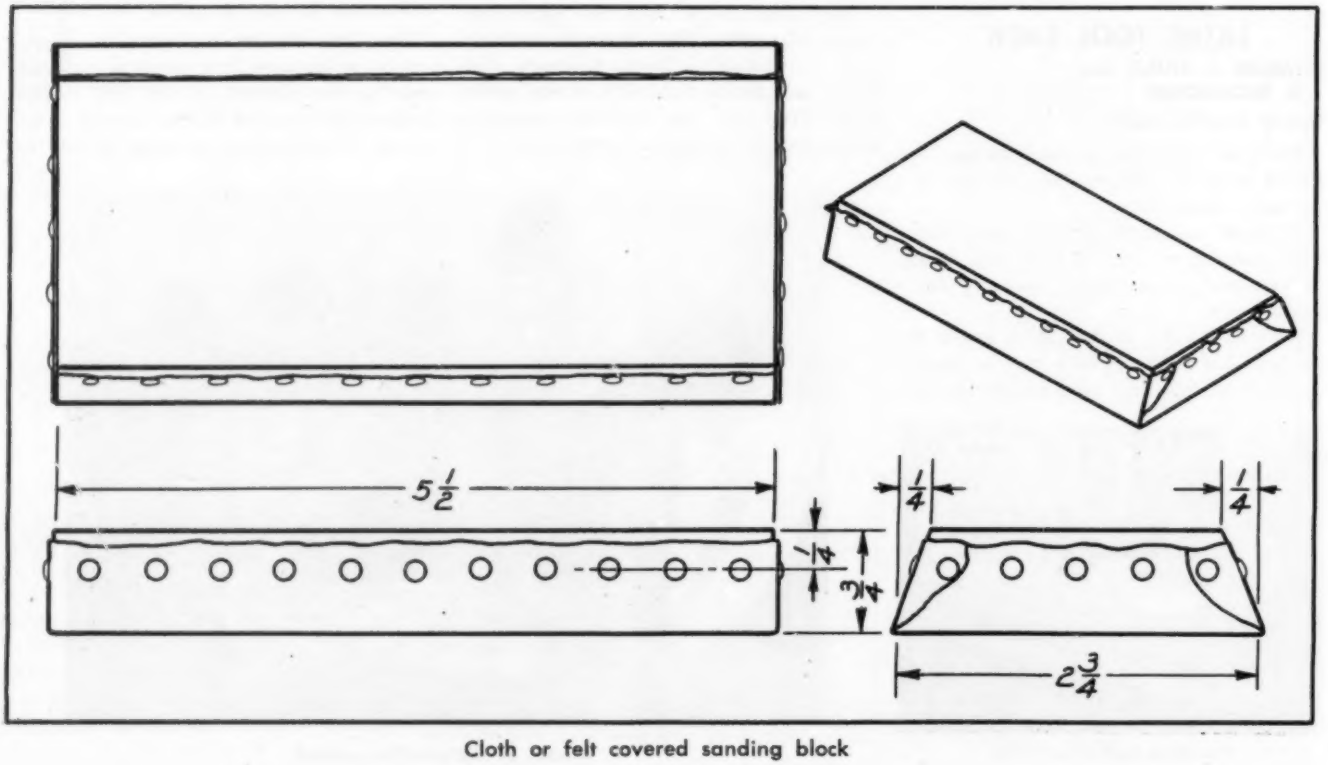
After teaching for a number of years and after using a wood sanding block, I have found that a wood block covered with cloth does the job of sanding not only much better, but faster. It also saves sandpaper and prevents tearing of sandpaper in many instances. The latter is true, especially with beginning students.

A sanding block made according to the accompanying working drawing has proved very satisfactory in my ninth-grade industrial-arts classes. It is used chiefly on wood, but it may be used on Keene cement projects just as successfully.

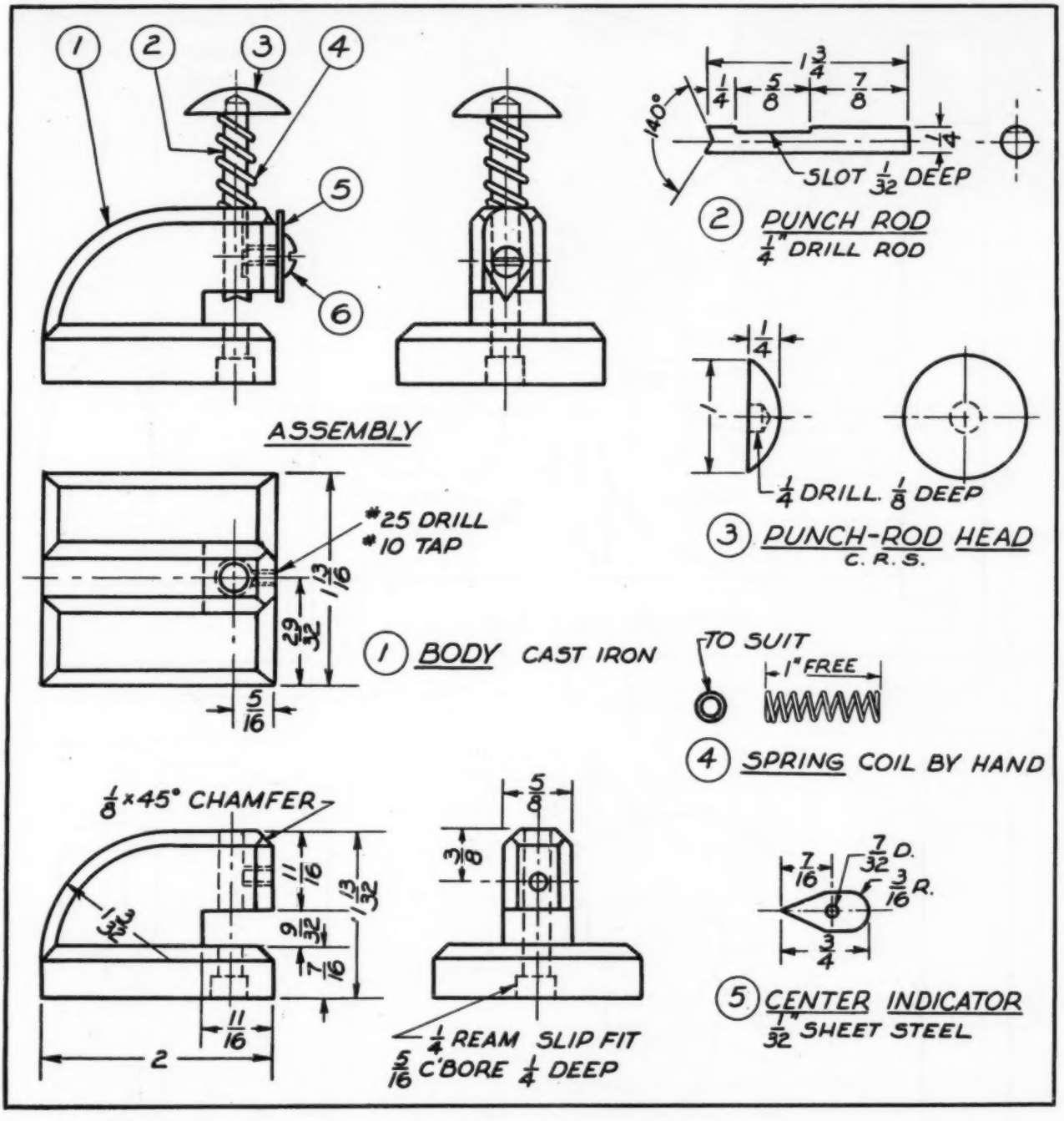
The sanding block can be made by:

1. A beginning student in woodwork;
2. An advanced student, or
3. The instructor on machines.

In any event the block should be covered by the student with a piece of heavy cloth or felt. The students in my class bring the cloth to the shop as an assignment. Upholstery material and felt were found to be the best material for covering the block. Care must be taken to stretch the cloth tightly over the block, then tack on as indicated.



Cloth or felt covered sanding block



Paper punch submitted by Charles E. Adams, Detroit, Mich.

MEXICAN-BURRO BOOK ENDS

ROLLAND A. HOEHN, JR.
East St. Louis, Ill.

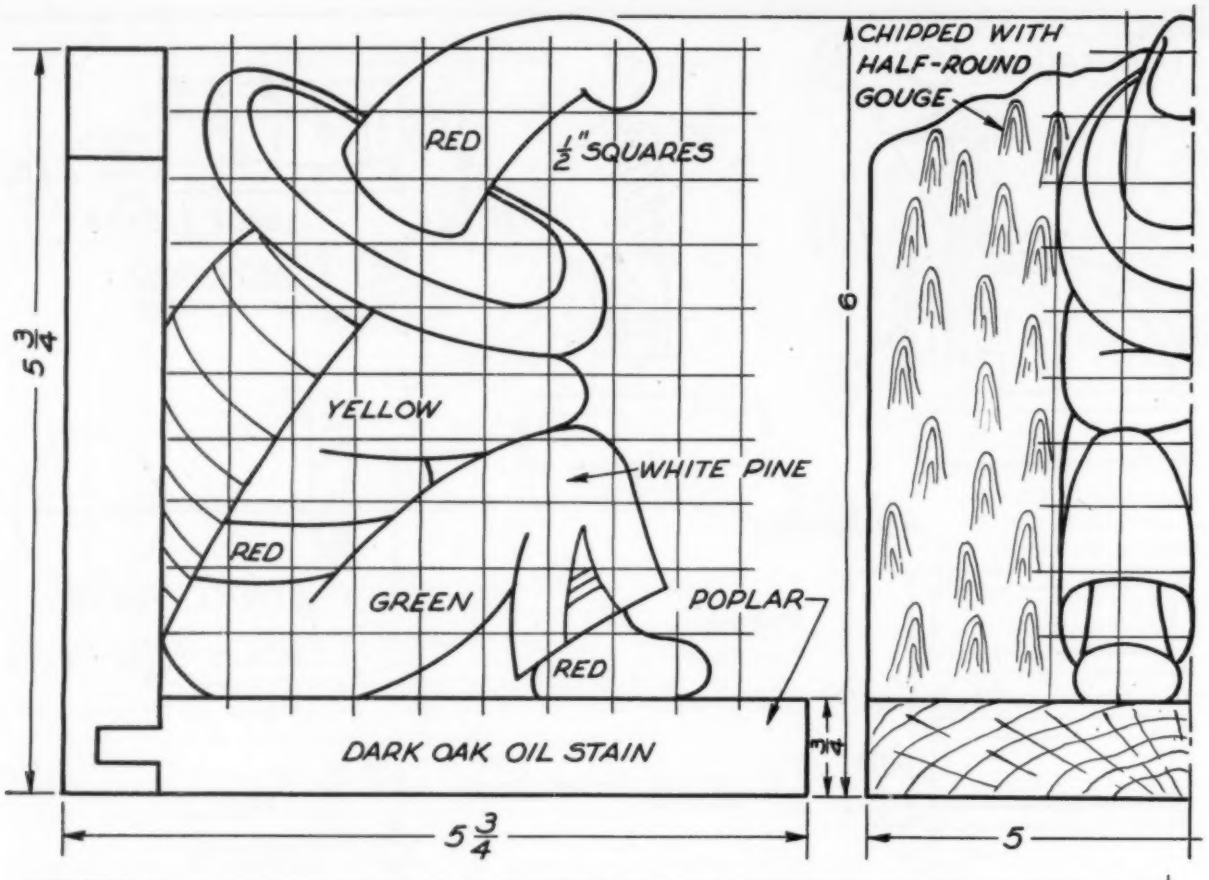
These novel book ends furnish an interesting project for the school shop. Let's call them the "Mexican-burro" book ends. Each figure is band-sawed from 2-in. soft white pine and whittled to the desired shape with a sharp jackknife. They are then sanded smooth with medium and fine grade sandpaper.

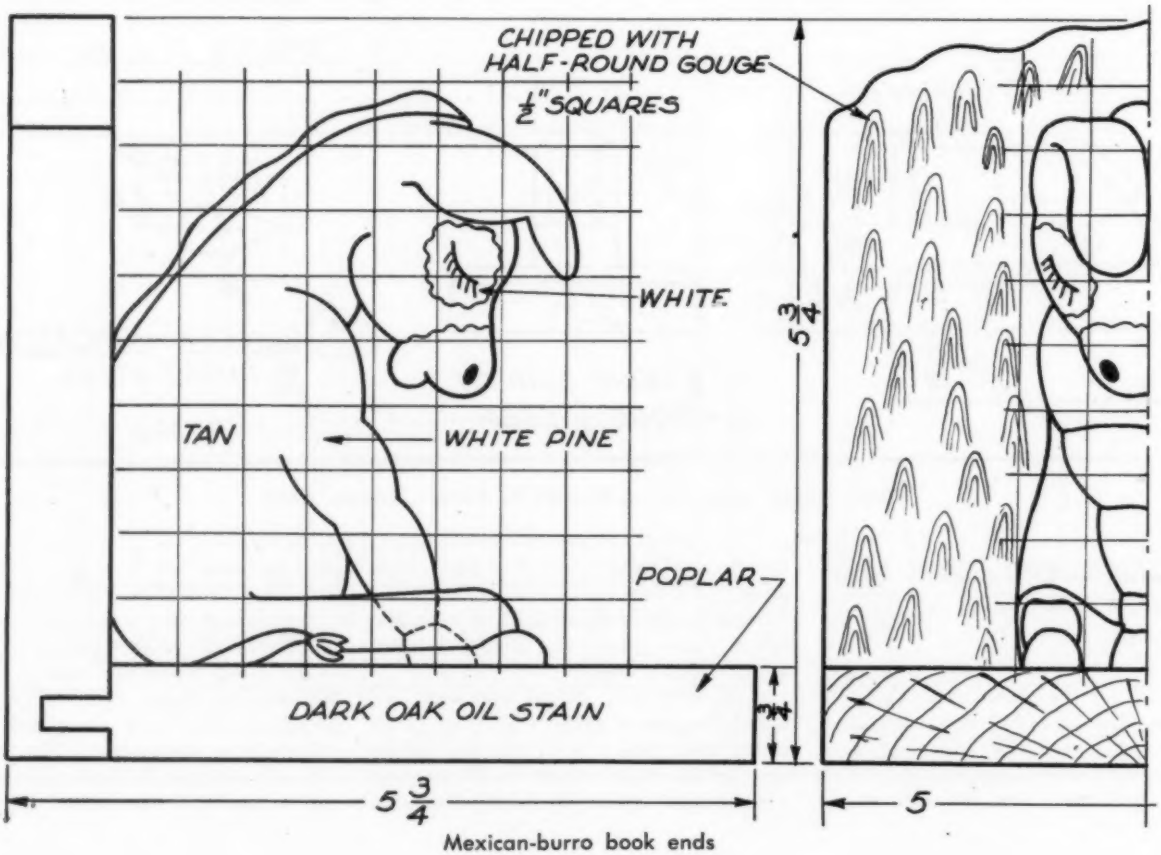
Poster paints may be used to color the figures. These paints dry almost instantly and are easy to apply.

Backs and bases of the book ends are made of a piece of ¾ by 5 by 25-in. yellow poplar. Each piece is 5 in. wide and 5¾ in. long and all visible surfaces are chipped with a small wood gouge. Backs and bases are glued in place with a tongue and groove joint. Stain them with a dark oak oil stain.

Heavy gauge sheet metal may be fastened to the underside of each base to give added weight. Green felt should then be glued to the underside of the metal to protect any surface the book ends are placed upon.

Both figures are fastened to the book ends with a good grade of wood glue. All colors may be protected with several sprayings of





Mexican-burro book ends

Mexican-burro book ends

pressurized liquid transparent plastic. If this material is not available give them several coats of clear lacquer, shellac, or varnish.

* * *

Twenty-four per cent of all drivers involved in fatal automobile accidents in the U. S. last year were between the ages of 18 and 24.

PLASTIC CAKE SERVER

CHRIS H. GRONEMAN
Industrial Education Department
The A & M College of Texas
College Station, Tex.

Plexiglas or Lucite table appointments make pleasing accessories for any dining room ensemble. The cake server illustrated here will be appreciated by any hostess. The one shown

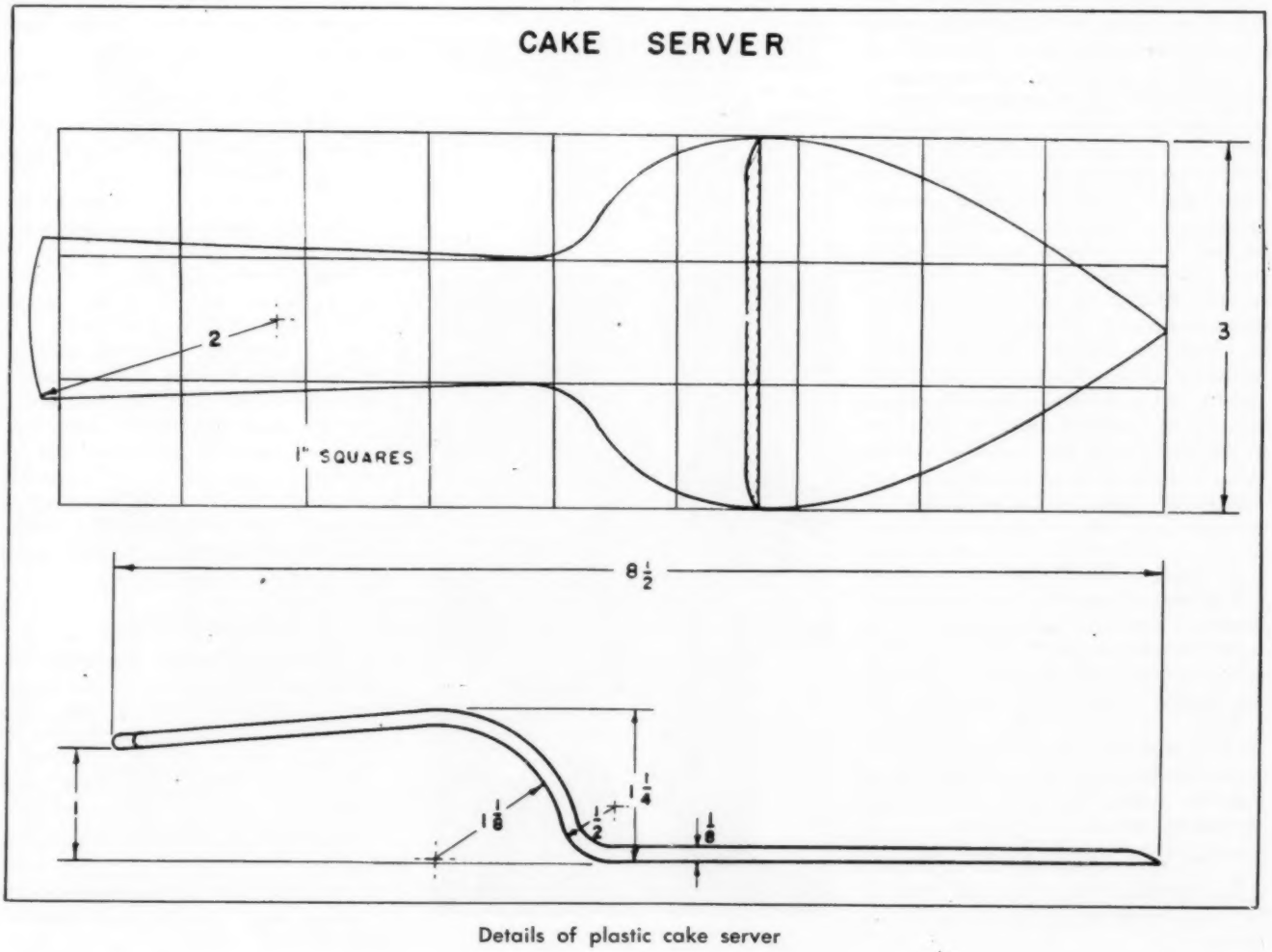
Plastic cake server

is easy to cut and form and will prove to be an ideal medium for handling individual servings of cake or other pastries.

The edges are beveled to eliminate tearing cake edges when pushing the server beneath the piece.

Design has been omitted from the handle to allow individual choice of surface decoration, but a good idea is to pick an outstanding feature of the silver or china pattern and repeat this motiff in a simplified version on the cake server.

It might also be tinted or dyed to blend with an all-purpose color scheme.



Details of plastic cake server

Bill of Material: 1 pc. ⅛ by 3 by 9½ in. plastic.

Procedure

1. Lay out full size template.
2. Transfer template to Plexiglas or Lucite.
3. Cut with jig or band saw.
4. File the edges to the cross section shown.
5. Sand and buff the edges.
6. Heat and bend as shown in the drawing.
7. Tint if desired.
8. Apply a coat of wax and polish with a soft cloth.

A PUPIL CO-OPERATIVE PROJECT

L. D. JENKINS
Woodworking Instructor
Garfield Occupational School
Dayton, Ohio

The project should be an important factor in any program of industrial arts because of its concreteness in performing some particular job. Since a major part of the pupils' time is spent in making projects, they become an important factor in the total program.

Its importance is further exemplified when it meets the particular needs and interests of the pupils. The making of a project provides an opportunity to feel the pride of accomplishment and the subsequent rise in self-esteem which might be denied or difficult to attain in other school activities.

The objective of any teaching program should be used. It is not sufficient to subscribe to a set of aims and then forget about them. However, one must analyze them carefully in terms of the outcomes expected. If behavior changes are what is really desired in any subject, then the outcomes of those changes should be carefully checked to determine if learning has really taken place. We cannot expect every project to fulfill the entire list of proposed criteria which might be set up, but it should at least become a vehicle whereby the pupils might arrive at some appreciable achievement of the objective desired.

The Project

A kitchen cabinet was chosen by a pupil because it was a much needed article in his home. After careful consideration of the probable time and ability necessary to complete the project, a group of his classmates volunteered to assist him with its construction. A class discussion of its advisability was favorable which resulted in making it a co-operative project. Hence the idea "A Pupil Co-operative Project" was initiated.

Procedure

The method of procedure for the construction and installation of the project was as follows:

1. Obtaining the available space in the kitchen
2. Making a freehand sketch with approximate dimensions
3. Analyzing the learning units
4. Making an analysis of the related subject matter
5. Studying the utility of the project
6. Considering the extent of the difficulties to be encountered
   a) Skills required
   b) Cost of materials
   c) Time required
   d) Equipment necessary
7. Design
8. Procurement of materials
9. Finish
10. Installation

A group of boys was assigned to various tasks for the construction and installation of the kitchen unit. Before the working drawings were started, available space was checked carefully and the studdings in the wall were located to make sure of rigidity in anchoring the unit.

The ceiling height was checked and compartments were designed to provide for infrequently used items, thus utilizing that space which is often boxed in for the purpose of lowering the ceiling.

An opening in the upper unit was planned to accommodate a window but this idea was discarded because of the extra expense involved.

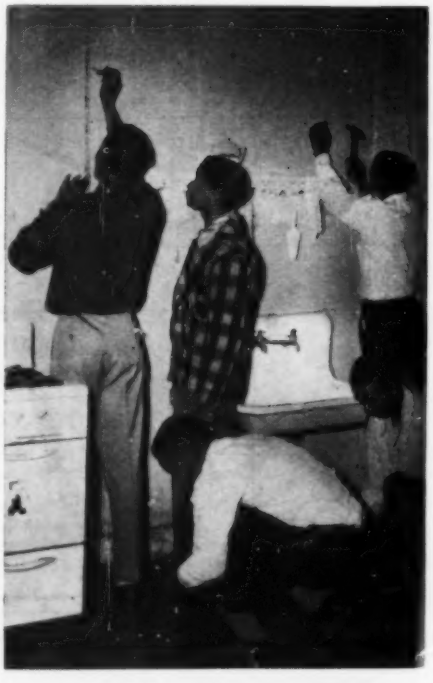


Fig. 1. Taking the measurements

Two Dutch girls made of sheet aluminum with sprinklers in hand were designed to hold small potted plants and an electric clock was installed in the valance.

Cupboards on each side of the opening have four shelves to accommodate dishes and other kitchen utensils.

The floor unit was designed to take care of a double rimmed sink and was placed in its respective position so as to be accessible to the old plumbing fixtures.

The front was then designed to conform to available space left on either side. Slots were cut in the imitation drawer heads to allow ventilation for the sink compartment. A toe space was arranged at the base which is always advisable for close working conditions at the counter and sink.

The counter and doors were made of ¾-in. plywood and the framework and drawers were made of ponderosa pine. Enamel was the finishing material which harmonized with the other kitchen facilities.

Illustrations

Figure 1 shows the group making a careful survey of the available space preparatory for making the working drawing. Catalogs showing kitchen units were reviewed in order to secure ideas relative to the general purposes and utility standards required.

The pupil who selected the project appears in Figure 2 using the router to make a recess for the installation of the sink-well frame. This pupil has acted as shop foreman for the past two years and his ability to secure co-operation from his classmates is reflected in the finished project. The project, as illustrated, is objective evidence of what can be done by a co-operative group of pupils.

Figure 3 shows the completed units installed in the pupils' home and no comment is necessary to prove the outcomes on the part of the pupils participating. Aside from the personal feeling of satisfaction and accomplishment on the part of the pupils, the project resulted in what might be termed an "unplanned" public relation activity, attracting the special attention and praise of parents and neighbors in the community.

Revealed Outcomes

It was definitely noted throughout the construction and installation of the project that some desirable outcomes were being achieved. Those that were most apparent are as follows:

1. Recognition of the necessity for careful planning.
2. Respect for and confidence in their shop foreman.
3. Urgent desire to visit some manufacturer to become more acquainted with industrial processes.

Fig. 2. Putting on the finishing touches

4. Development of a feeling of satisfaction and accomplishment.

5. Creation of earnest desires for better home conditions.

6. Offered possible promotion for good public relations.

LEATHERCRAFT TOOL KIT

OLIVER W. LAYTON
Nebraska State Teachers College
Chadron, Neb.

The leathercraft tool kit, described in this article, is designed for use by teachers, students, or hobbyists. It is made from sheet metal, 35 by 29½ in., Figure 1. The kit pictured is made from 20-ga. aluminum, but tin or sheet iron of 28 to 24 ga. would do just as well. The kit is compact, yet gives sufficient space for all of the basic tools. When closed the kit is 6 in. deep, 10 in. high, and 12 in. long.

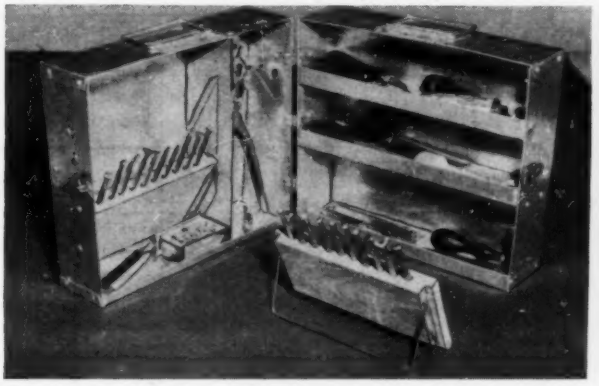


Fig. 1. Leathercraft tool kit

It is made in halves hinged on one end. It is optional whether a long hinge, or two or three small hinges are used. The kit is not designed to hold heavy tools, but will, in most cases, stand fairly rough treatment.

The procedure for making the kit is:

1. After thoroughly studying the layout plans of the project, place the pattern upon the sheet metal. Be sure each measurement is correct before any cutting is done. Exercise care to insure squareness of material and pattern.

2. Cut out each piece, notching them to conform to the patterns. Do not let snips cut beyond lines of pattern.

3. Plan order of folds to be made and bend on brake or bar folder. Make sure that each time you bend the material that it is correctly placed in the brake. Some of the shorter sides will need to be bent, either by using a handy seamer, or by clamping a small block along the line. Apply pressure along as much of the surface as possible, bending a little at a time until entire length of end or side is at 90 deg. with the back.

4. A number of ways (spot weld, solder, or riveting) may be used to fasten the edges, depending on the type of material used in making the kit. It is necessary to locate and punch or drill holes if rivets are used. Try to have a uniform pattern so that the finished project will have both purpose and beauty.

5. After fastening the edges of the sides, the next job is inserting the shelves into one side. The location of these can be changed to fit personal desires or placed as shown in Figure 2, where they are placed 3 in. apart with the top shelf 3 in. from top of

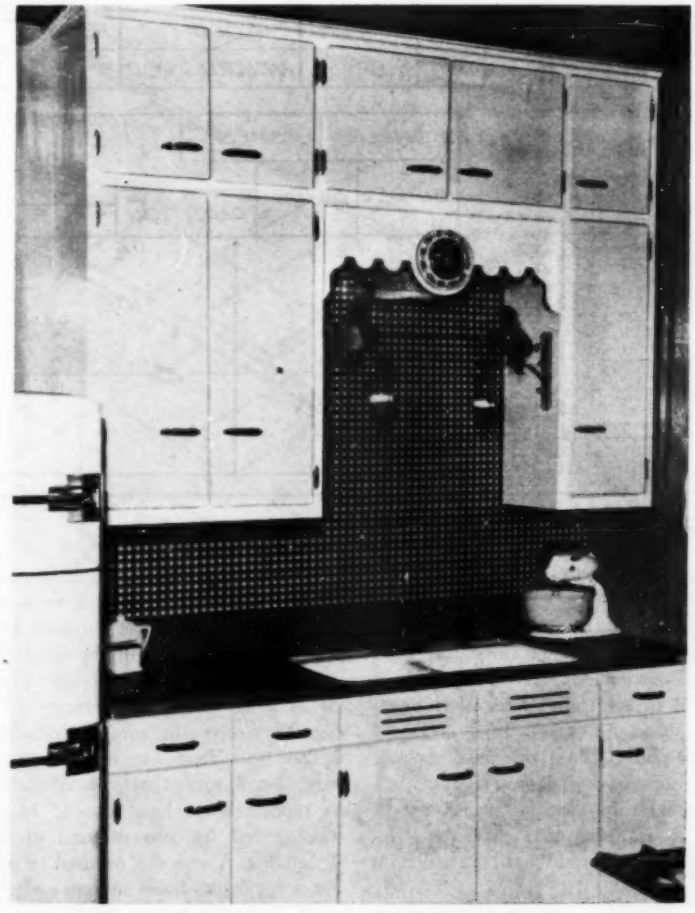
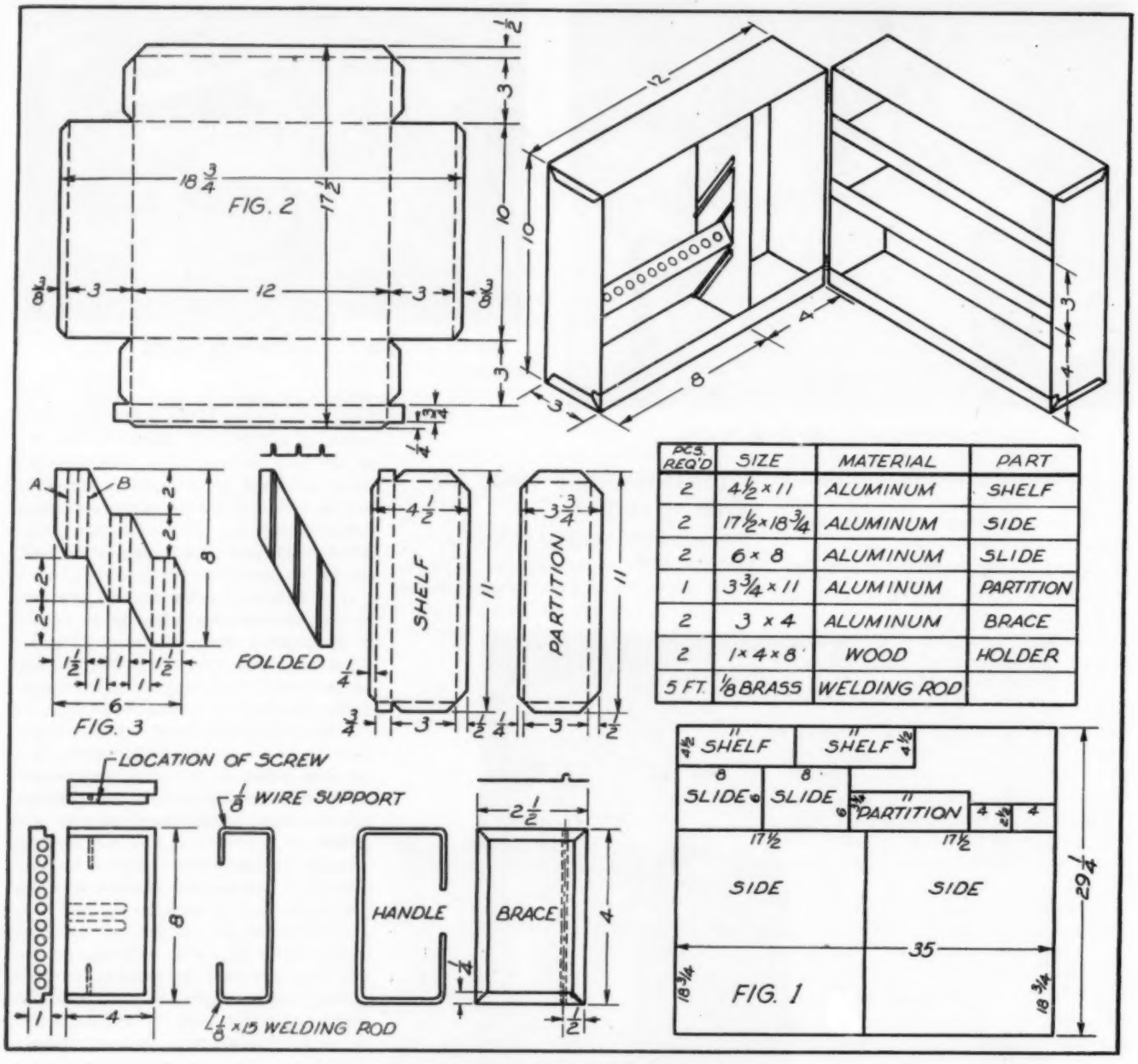


Fig. 3. The kitchen cabinet installed in the home



PCS. REQ'D	SIZE	MATERIAL	PART
2	4½ × 11	ALUMINUM	SHELF
2	17½ × 18¾	ALUMINUM	SIDE
2	6 × 8	ALUMINUM	SLIDE
1	3¾ × 11	ALUMINUM	PARTITION
2	3 × 4	ALUMINUM	BRACE
2	1 × 4 × 8	WOOD	HOLDER
5 FT.	⅛ BRASS	WELDING ROD	

Fig. 2. Details of leathercraft tool kit

kit. The dotted lines on layout show location.

6. The slides for the two removable shelves can be made from small 90-deg. angle braces or from one solid piece as shown in Figure 3. If angle braces are used the manner of fastening them is up to the individual's initiative. Otherwise the planned procedure is: First mark each line to be folded with a punch. This will insure accuracy in bending. Place material in brake with only *A* showing. Bend this to 90 deg. Remove material, turn it over, and clamp down ½ in. from last bend. Make 45-deg. bend and again remove and turn over. Clamp the brake ½ in. from the last bend and make the 90-deg. bend. Slide material to line *B* and make 90-deg. bend.

Remove, turn over, and clamp material ½ in. behind last bend. Continue this until the slide is completed. The handy seamer may be used to help finish folds after break has started bend. CAUTION: It is necessary to make the other slide with just opposite bends to insure having desired result.

7. Before inserting partition attach one of the slides to it. This will make the work easier than if you wait until partition is installed.

8. Insert other slide into kit end; then put partition in place.

9. The removable toolholders are made from two pieces of wood 1 by 4 by 8 in. A ¼-in. groove is cut from each end about one half the thickness of the wood. One edge is beveled to let shelves slide deeper into kit. A notch is also made along this beveled edge to receive the wire support. Holes are drilled 1 in. from top to provide place for wire; small screws are placed conveniently as support wire stops. Use 15 in. of ⅛-in. welding rod for support, and exercise care in bending. A vise can be used to advantage. Space ten 5/16-in. holes on upper edge of shelf.

10. Take remaining metal from original sheet and cut two pieces 3 by 4½ in. Make

¼-in. folds in each side. With turning machine, make a groove ½ in. in from the longer edge. Make two handles from ⅛-in. welding rod. Use about 12 in. of rod for each. Attach handles to kit by spot welding, soldering, or riveting.

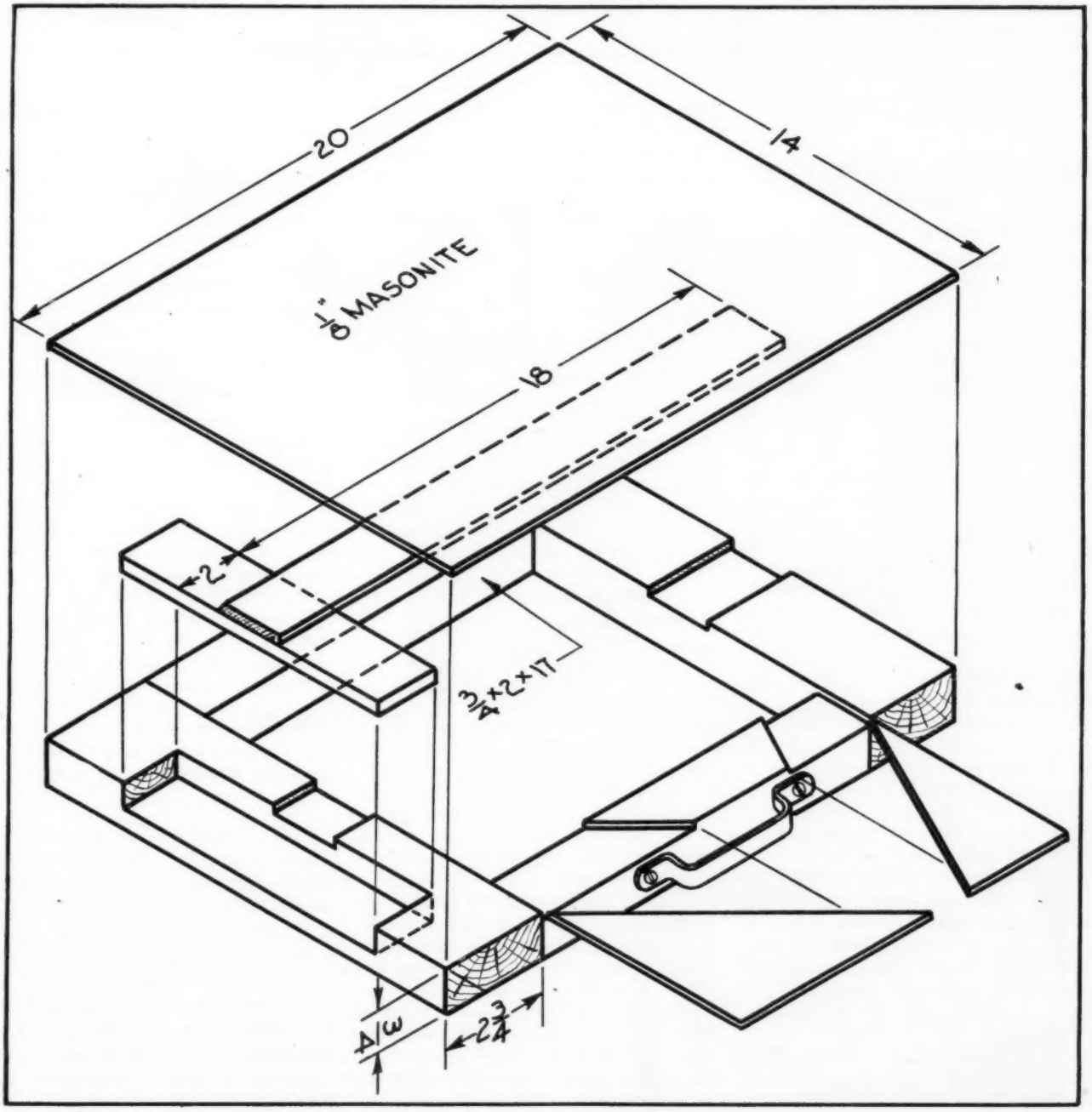
11. Buy, if possible, a small latch and place it upon the kit, exercising care in placing each piece to insure having a close fit.

This kit is designed primarily for leathercraft or similar hobbies using numerous small tools. It is so designed, that it may set upon the workbench, opened at 90 deg., and so that all tools are readily accessible. The wood shelves are designed for removal and have their own supports which enable them to stand alone, as shown in the half tone. If only stamping tools are needed this feature permits you to have almost the entire workbench to work on. One of the main advantages of this kit is that it is compact, has room for most of the common leatherworking tools, and is within financial reach of all.

COMPACT DRAWING BOARD CARRYING KIT

HARVEY GORDON
Jefferson Junior High School
Winona, Minn.

The practice of taking home school drawing equipment and boards for overnight work has always been inadvisable. Students neglect to return equipment in time for reassignment, and damage to T squares and triangles results because they are awkward to carry.



A compact drawing board

The drawing board shown is 14 by 20 in. It has a Masonite top and is routed out for two 6-in. triangles and an 18-in. T square. With an iron or plastic carrying handle, it is completely self contained. The end pieces are ¾ by 2¾ by 14 in. Center piece (not essential) is ¾ by 1⅛ by 12 in., and the top and bottom rails are ¾ by 2 by 17 in. Mortise-and-tenon construction was used throughout. The ⅛-in. Masonite top was glued and screwed in place. The triangles can be made of ⅛-in. Plexiglas. This same material may be used for the handle; also, to complete the project the T square could be shop made as well.

While this board was originally intended as a supplement to shop equipment, the desire for personal ownership has made it one of the most popular projects in my shop.

RECOGNIZING THE PRINTERS' DEMONS

FRANCIS J. KAFKA
Industrial Arts Teacher
City Schools
New York City, N. Y.

As a beginning teacher of graphic arts I am burdened no less than my capable predecessors with the problem of teaching pupils to recognize in typesetting, the difficult lower case letters known in the trade as the "printers' demons." Primarily, these letters are, u, n, p, b, q, d. Any teacher who has *cleaned* job cases in a junior high school graphic arts shop knows how confused the pupil is where these letters are concerned. Reading a letter in the upside-down position is a skill which requires a considerable amount of relearning. However, with most letters in the English language, the top is readily distinguished from the bottom even when the letter *is* printed inverted. With the so-called "demons" this is not the case.

I have developed a little device, shown in Figure 1, which I think is original, and which gives motivation to this difficult lesson as well as reinforcement to learning.

1. Have each pupil take a small piece of paper, about 3 by 5 inches, and fold it horizontally in the center so that the fold runs across the wide dimension.

2. Just *below* this folded line, have the pupils print the lower-case letters, u, n, p, b, q, d, using a soft pencil. It will aid, if the teacher prints enlarged versions of these letters on the blackboard, since pupils are usually not familiar with the placing of the serifs on these particular letters.

3. Then have the pupils fold the upper portion of the piece of paper toward them, on the previously creased line, so that this upper part covers the lower portion, bearing the printed letters.

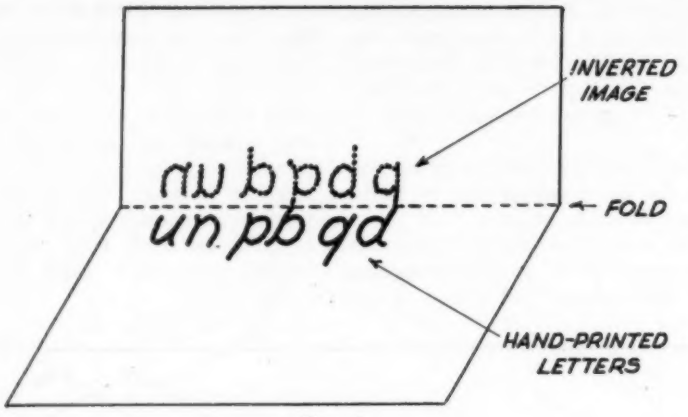


Fig. 1

4. With the thumbnail, or some other hard object such as the end of a fountain pen or mechanical pencil, ask the pupils to rub vigorously over the area containing the printed letters.

5. Have the pupils open the folded paper so that it is in the original position, with the pencil-printed letters on the lower half. A grayed image of the letters, *as they will appear on the type face,* can now be seen just above the folded line.

This device can also be used for teaching what I have named the "minor demons." These are the lower-case l and i, the uppercase I, the numeral 1, and the uppercase O, lower-case o, and the numeral zero.

The lesson fulfills the requirement of active participation by the pupil, as well as proving interesting, and therefore motivating.

AUTOGRAPH BOOKS

LAWRENCE E. HAYES
Roosevelt Junior High School
Charleston, W. Va.

The autograph book has proved to be a popular project in the graphic-arts division of many industrial-arts departments. It naturally appeals to the teen-ager as a practical possession and as an ideal gift to his friends. It is a project which also appeals to the instructor since materials for its construction are usually easily obtained and at a reasonable cost.

The autograph books can be produced at a very nominal fee by utilizing one's paper trimmings and those of the local printers who frequently contribute scrap gratis, or they will sell it at a reasonable price. Bright and multicolored cover stocks may be obtained from advertising folders, discarded workbook covers, or wall paper sample catalogs. The use of these papers add to the economy of the project just as they contribute to the variety, utility, and personality of the finished product.

The instructor may encourage the use of several processes which easily lend themselves to experimentation when decorating, printing, and binding the book. Dull and unattractive covers may be marbled, stippled, or splattered to add color and variety. Novelty may be introduced by printing words or sentences curved or irregular, thermographing, adding tassels, die cutting, and linoleum-block printing. All of these processes are possible without expensive or specialized equipment.

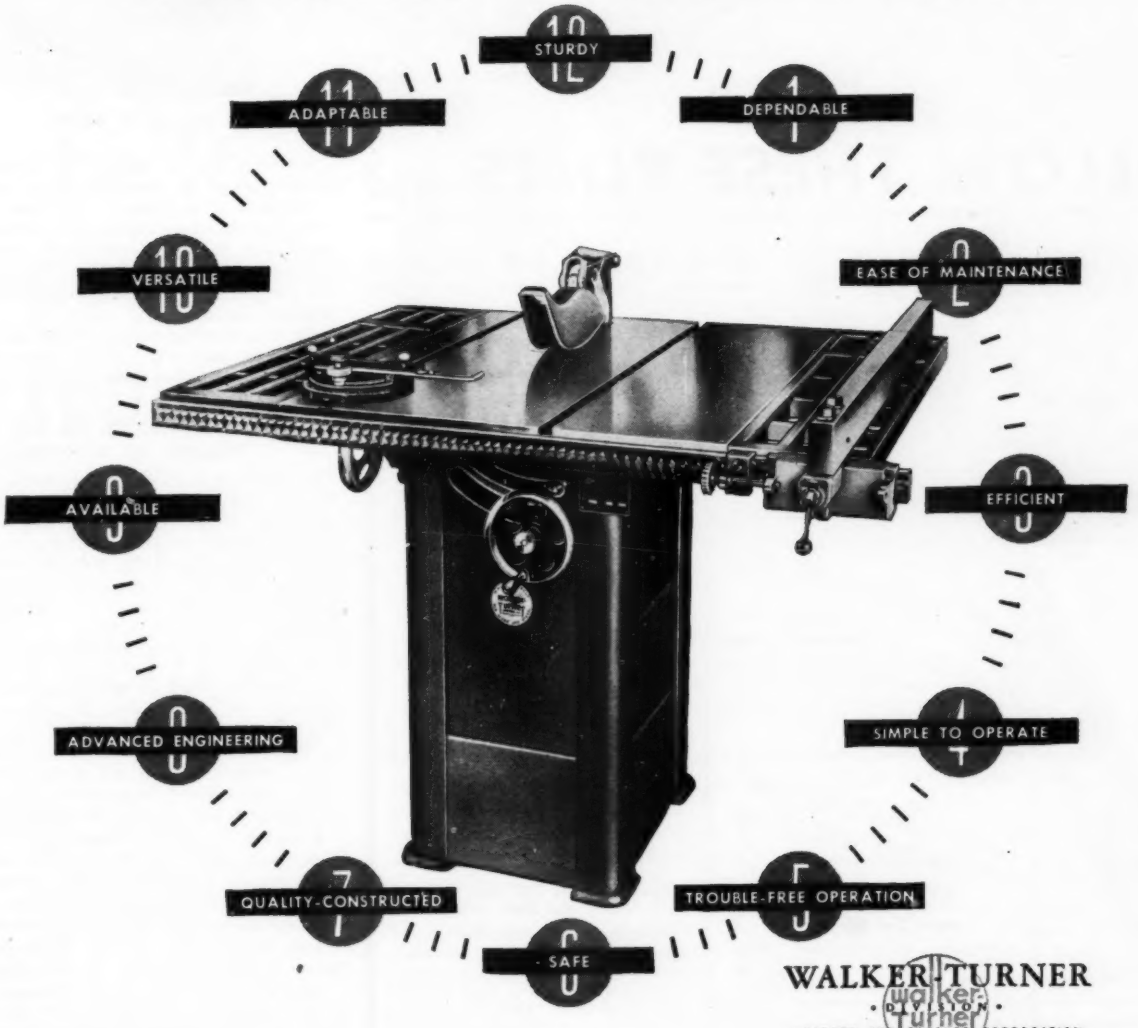
The filler may consist of white paper or variegated colors. The pages may be plain or they may have titles printed at the top, such as faculty, classmates, football team, etc. The fillers may also be made up of colored sections and each section bearing a title page. There may be individual pages bearing such titles as: *The Outstanding Events of the Year, Honors Won, Activities Participated In, Athletic Schedules, Favorite Snapshots,* and other events and activities which appeal to the teen-age student.

The book may be bound in a variety of manners, such as saddle stitch, Chicago or binding screws, leather thongs, ribbon, or it may be sewed and case bound. In some cases mechanical bindings might be accessible.

* * *

Most railroad ties are removed from service because of mechanical damage rather than decay. In 1950, 36 million were taken out of service with a cost of $180 million to replace them. As a result of research developments undertaken by the Timber Engineering Company, in behalf of the lumber and railroad industries, to prevent checks and plate cutting, tie replacement cost will be reduced as much as 10 to 20 per cent. — *Natl. Lumber Mfg. Assn.*

It's time you knew why educators are turning more and more to WALKER-TURNER machines



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ASSOCIATION NEWS

(Continued from page 9A)

tion — December 5, 1951, Milford High School. Theme: Project Swap Night.

February 6, 1952, Pine Manual Training School, Ansonia, Conn. Theme: Demonstration Night.

May 7, 1952, New Haven, Conn. Theme: Administrators' Night.

Central Connecticut Industrial Arts Association — December 5, 1951, Canton High School. Theme: Flexibility in Project Selection.

February 6, 1952, Newington High School. Theme: Administrators Look at Industrial Arts.

May 7, 1952, Rockville High School. Theme: Demonstration Night, and annual meeting.

Personal News

DEWEY F. BARICH NOW MANAGER OF INDUSTRIAL ARTS AWARDS

Professor Dewey F. Barich, formerly head of the industrial arts department at Kent State University since 1942, has been appointed manager of industrial-arts awards in Ford's community relations department.

In his new position, Barich will work with industrial arts and vocational education teachers, administrators and organizations. He has served as a judge of the national industrial-arts competition since it was started five years ago.

Dewey F. Barich

His office will be in the Ford administrative headquarters at the Rotunda in Dearborn, Mich.

Barich came to Kent in 1942 from Michigan where he was state supervisor of industrial education with the state department of education. Previously he had taught industrial arts in Flint and Trenton, Mich., public schools and at Central Michigan College.

He is currently president of the National Association of Industrial Teacher Trainers and past president of the Ohio Industrial Arts Association.

DR. FITZPATRICK TO GET A DEGREE AT WINONA

Dr. Edward A. Fitzpatrick, president of Mount Mary College, will be given an honorary doctor of education degree from St. Mary's College, Winona, Minn., at a ceremony honoring St. John Baptist de la Salle, who, in 1691, founded the order of Brothers of the Christian Schools. Dr. Fitzpatrick recently completed a biography of the saint.

♦ Dr. Gaylord P. Harnwell, chairman, department of physics and director of Randall Morgan Laboratory of Physics of the University of Pennsylvania, has been appointed chairman of the Committee on Ordnance of the Research and Development Board, Department of Defense. The appointment was effective November 1.

♦ Milton K. Grey, former sales manager at Benchmaster Mfg. Co., has recently returned to this company as general manager. Besides serving in his new capacity as general manager, sales will continue to be under Mr. Grey's direction.

♦ As of November 1, 1951, G. Wesley Ketcham, the state supervisor of industrial arts of Connecticut, will be on a leave of absence until September 1, 1952. He will be working with the National Association of Manufacturers covering the northeastern states with headquarters in New York City. Kenneth Lundy will be acting supervisor in Mr. Ketcham's absence.

♦ Dr. Burl N. Osburn, head, Department of Industrial Arts, State Teachers College, Millersville, Pa., served as visiting professor in the department of industrial arts, Ball State Teachers College, Muncie, Ind., during the first summer session of 1951. Dr. Osburn conducted a graduate seminar and a course in industrial-arts design.

♦ Earl C. Floyd, instructor at the Iowa State Teachers College, Cedar Falls, Iowa, taught classes in industrial arts for the elementary grades in the department of industrial arts at Ball State Teachers College, Muncie, Ind., during the second summer session, 1951.

(Continued on page 16A)

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Starrett STEEL RULES

English Pattern Rule No. 414
A general utility, tempered steel rule with easy-reading bold figures and heavy markings. Ideal for school and woodworking shops. Lengths from 1 to 6 feet.

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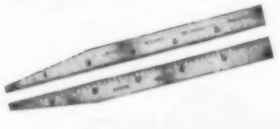
A good rule for students and apprentices with quick reading 32nds and 64ths on one side and table of fractions and decimal equivalents on the other. 6" length, ¾" wide, 3/64" thick.

Flexible Steel Rule No. 306
Similar to No. 305 except with table of letter and drill sizes on reverse side. 6" length.



Tapered End Rule No. 328
Graduated in 64ths and 32nds with tapered end for measuring in holes, slots, recesses. 6" length.

Hook Rule and Drill Point Gage No. 22C
Serves as pocket rule, hook rule or drill point gage. 6" length. Graduated with 8ths, 16ths and quick-reading 32nds and 64ths.

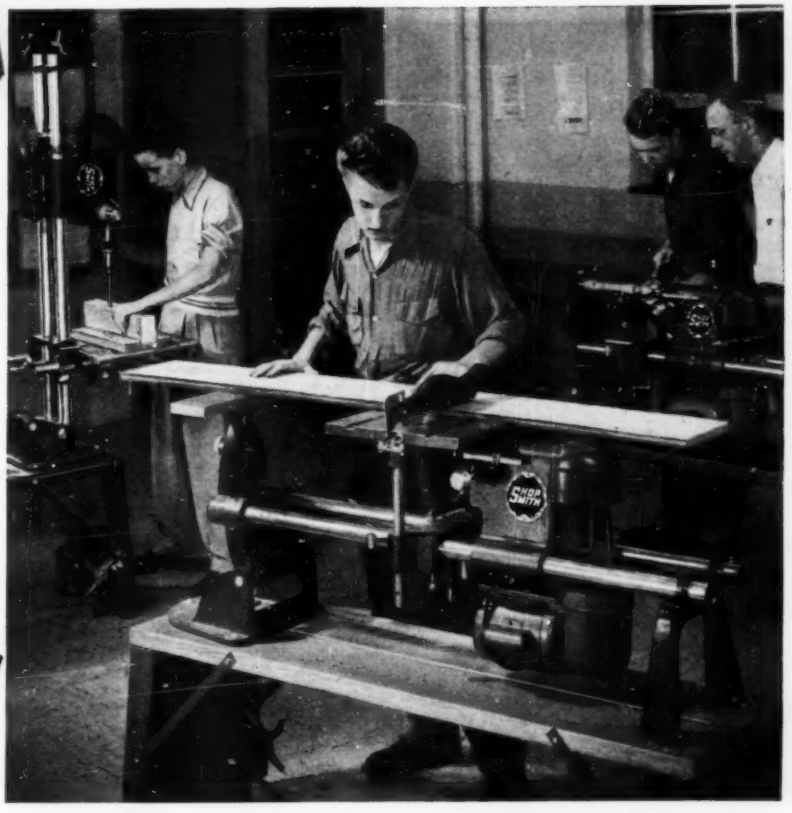
FREE "Helpful Information For Students and Apprentices"
A valuable aid in class instruction, written and edited especially for shop students. Write for your copy. Address Dept. CE.

Starrett
SINCE 1880
WORLD'S GREATEST TOOLMAKERS

THE L. S. STARRETT COMPANY · ATHOL, MASS., U.S.A.

BUY THROUGH YOUR DISTRIBUTOR
MECHANICS' HAND MEASURING TOOLS AND PRECISION INSTRUMENTS
DIAL INDICATORS · STEEL TAPES · PRECISION GROUND FLAT STOCK
HACKSAWS, BAND SAWS and BAND KNIVES

Can you find the 15 power tools in this picture?



THIS PICTURE illustrates an important new concept in industrial arts training. It's the *Flexible Shop*. It's based on the flexibility inherent in SHOPSMITH, Magna Engineering's multi-purpose power tool.

In the *Flexible Shop*, flexible work stations supplement or take the place of individual power tools. Each of the three SHOPSMITHS pictured above is actually five tools—8″ circular saw, 12″ disc sander, 33″ wood lathe, 15″ vertical drill press and horizontal drill. Each can be changed to fit the needs of the class or the teaching techniques of the instructor.

The advantages are apparent and impressive: faster indoctrination in the safe and proper use of each tool (since all SHOPSMITHS can be set up alike), fewer tie-ups (since SHOPSMITHS can be changed to relieve the pressure on one type of tool), 50% saving in space (SHOPSMITH requires a working area of 48 sq. ft. compared to 104 sq. ft. for five separate tools) and fewer budget restrictions (SHOPSMITH costs $189.50 less motor, $232.45 with motor and special school guards).

In each of its five basic positions, SHOPSMITH is a different, basic, single-purpose tool—a tool that will equal or exceed the performance of the tool it replaces. Operation is standard. Quality is well above standard – heavy, fine grain castings; ball-bearing spindle, tolerances found only in the finest tools. Write for results of educators' research on the *Flexible Shop* and detailed SHOPSMITH specifications.

Magna Engineering Corp.

SHOPSMITH

Dept. 198-U, *at factory nearest you*
12819 Colt Road, Cleveland 8, Ohio, OR Menlo Park, California

• Please send me complete information about the *Flexible Shop* and the application of SHOPSMITH to industrial arts education.

NAME_____ POSITION_____

SCHOOL_____

ADDRESS_____

CITY_____ STATE_____

PERSONAL NEWS

(Continued from page 14A)

During the first summer session, 1951, the Ball State Teachers College, the following representatives displayed their wares in the Department of Industrial Arts: Don Jesseman of Stanley Tools, William McKnight, Jr., of McKnight and McKnight, D. F. Brucker, American Technical Society, and John Tague of Brodhead Garrett. These men spent two days answering questions for students regarding literature and equipment for use in industrial-arts laboratories and classrooms. Students from the field coming to the campus for summer work are deeply appreciative of such services, in order that they may be kept up to date on trends in both literature and equipment.

♦ Dr. Henry A. Loats served as acting head of the department of industrial arts, Ball State Teachers College, Muncie, Ind., during the second summer session, 1951.

♦ Goro Fujishima, Itsuo Kagami, Yoshio Kobayashi, Miss Kilsn Morikawa, and Haruo Takechi from Japan are visiting the United States to study our schools. They reported that the first Japan Vocational Education Association meeting was held in October of this year.

♦ Hilario G. Nudas attended the AVA convention at Minneapolis as the official delegate of the Philippine Islands.

Mr. Nudas is at present a student at The Stout Institute, Menomonie, Wis.

♦ George E. Kohrman, Missouri state director of industrial education since 1942, has been appointed director of vocational education of the Western Michigan College of Education, Kalamazoo, Mich.

♦ J. E. Hill, who has been acting as Illinois state director of vocational education since the resignation of Ernest J. Simon in 1950, has now been appointed to the post of state director of vocational education.

♦ Archie Bryant has been appointed assistant state supervisor of industrial education of North Carolina.

♦ H. A. Pederson, director of the industrial arts division, Wisconsin State College, Platteville, Wis., was elected president of the Wisconsin Industrial Arts Association on November 5, 1951, at the state convention at Milwaukee.

♦ The following graduates of the industrial arts department of State Teachers College, California, Pa., have obtained teaching jobs in Pennsylvania:

Richard Burch, Mechanicsburg; George Bernhardy, Sewickly; Antonio DeBrito, Philadelphia; Jesse Gerard, Braddock; Richard Grove, Mapletown; Robert Haas, Leetsdale; Joseph Kane, Ridgeway; Ronald Lethaby, West Mill Creek; John McCrory, Blairsville, Thomas Philip, West Mount, Upper Yoder; George Russ, Upper Darby; James Ray, Alliquippa; Benjamin Stasko, McDonald; Charles Templeton, Upper St. Clair Township; Cecil Tremaine, Verona; and William Uhl, Baldwin Township.

Those located in Maryland include:

Joseph Foytick, Anne Arundel County; Emil Hrebenach, University Park; Albert Johnson, Prince George County; John Linton, Prince Frederick; James Linton, North East; John Maley, Rockville.

Others are in the following places:

Frank Longevitch, Follansbee, W. Va.; George Myers, Bay Village, Ohio; Charles Aymin, Westinghouse; Walter Beirsdorfer, American Window Glass Co.; Joseph Ciarrocchi, Cadillac Motor Co., Cleveland, Ohio; William Long, Fairchild Aircraft Co., Hagerstown, Md.

♦ Dr. S. L. Coover taught two courses in industrial arts at the Texas A. & M. College, College Station, Tex., this past summer.

♦ Willard A. Allen has been appointed to the faculty of the industrial-arts department, Ball State Teachers College, Muncie, Ind. Mr. Allen was formerly an instructor at Oswego State Teachers College, Oswego, N. Y. He received his B.S. degree at Oswego in 1947, his master's of education at Pennsylvania State College, Pennsylvania, in 1950.

♦ Dr. Paul L. Scherer of the Cleveland, Ohio, public schools, has joined the industrial-arts faculty at Santa Barbara College of the University of California as assistant professor.

Dr. Scherer received his Bachelor of Science degree from Ohio State University, Columbus, Ohio, in 1930; a Master of Arts degree from Western Reserve University, and his doctoral degree from the same institution prior to his coming to California. He is a member of the National Education Association, Western Arts Association, Ohio Vocational Arts Association, American Vocational Association, Ohio Industrial Arts Association, and Ohio Education Association. He is past president of the Ohio Art Education Association and president of the Alpha Zeta fraternity in 1930.

The title of Dr. Scherer's most recent dissertation and research was "A Survey of Five Major Areas of Technical Education" — drawing, machine shop, printing, wood shop, and auto shop.

Outstanding!

NEW VALUE!

No. 1950
$4.80*
*Slightly higher in the West

Unbreakable head and handle of glossy red "TENITE" top the list of features that make this new Millers Falls Ratchet Brace ideal for schoolshop use!

MILLERS FALLS TOOLS
SINCE 1868
The Mark of Superiority

MILLERS FALLS COMPANY • Greenfield, Mass.

High on looks — and utility — moderate in price! That's the new No. 1950. Its tough "Tenite" head and handle are *guaranteed unbreakable* in use. Forged jaws and rugged steel ratchet mechanism. Steel clad, ball bearing head. Plated finish prevents rusting.

Best of all — it's Millers Falls quality throughout and priced at only $4.80.* Standard 10-inch sweep. See it at your hardware dealer's. A perfect brace for schoolshop use. In looks, performance, price — the biggest brace value on the market.

TEACHERS... How would you like to win Nationwide Recognition in 1952?

Henry Ford II congratulates Fred A. Marcellus of Hanford Union High School, Hanford, Calif. One of Mr. Marcellus' students was a 1951 Outstanding Achievement Award Winner.

More and more teachers each year take part in this nationally recognized program... and for 1952 I.A.A. offers you and your students more awards than ever!

Ford's Industrial Arts Awards program has become a national symbol of outstanding achievement . . . thanks to the enthusiastic support of industrial arts and vocational teachers. That's why Ford is pleased to announce that the number of awards for teachers in the 1952 program has been increased from nine to thirty. Teachers, whose students win Outstanding Achievement Awards, will be invited for a 3-day all-expense visit to Detroit and the famous Ford plant at River Rouge. At the Celebration Dinner they will receive special achievement awards.

Now is the time to get your students started! Boys and girls, grades 7 through 12, are eligible to enter. The project must be made in school . . . and under supervision of a vocational or industrial arts instructor. Last year 2400 students participated, representing 493 schools all over the country!

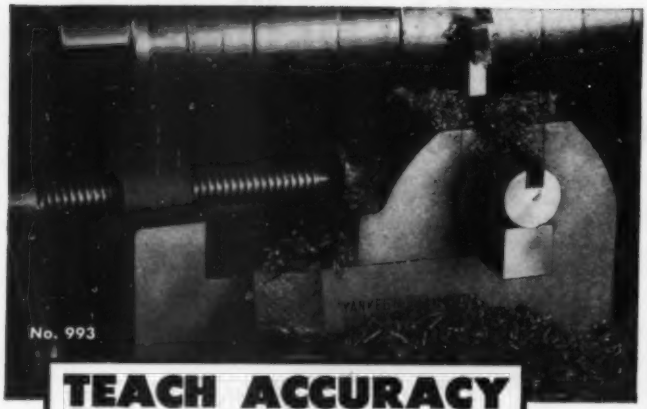
Leading industrialists and top-flight vocational educators will be selected as judges. The 1952 program offers over 1000 prizes, with a cash value totaling more than $40,000! Entries will be classified according to grade level, so that students will have equal opportunity to win. Industrial Arts Awards is an educationally sound program . . . whole-heartedly American . . . and bigger today than ever!

If your school has not already received full information, write to:

INDUSTRIAL ARTS AWARDS • FORD MOTOR COMPANY

2921 Schaefer Road, Dearborn, Michigan

"YANKEE" VISES



TEACH ACCURACY

Start-to-finish work holding encourages precision . . .

Your work is always accurately lined up in a "Yankee" Vise. Squared up . . . top, bottom, sides and front end for use in any position. Makes convenient, economical jig. For handling rounds, each vise is furnished with V-grooved, hardened steel block. Four sizes of "Yankee" Vises . . . 1½", 2", 2¾" and 4" jaw widths. Same sizes also available with handy swivel base for bench use.

Is the "Yankee" Tool Book on your shop shelf? FREE!

NORTH BROS. MFG. CO.
Division of The Stanley Works
Philadelphia 33, Pa.

DREMEL

14,400 SANDING STROKES PER MINUTE

MODEL 2000 with steel storage case, 25 abrasive sheets, sheepskin pad — $24.50

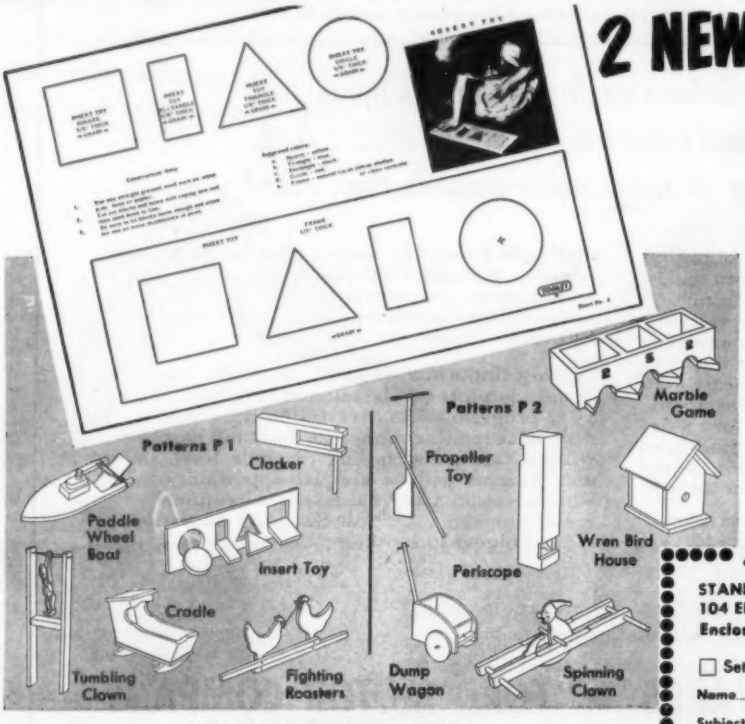
(PATENTED)

MODEL "A" with 6 sandpapers, 1 sheepskin, 1 felt pad — $14.85

DREMEL STRAIGHT-LINE ACTION SANDERS GUARANTEE FLAWLESS, SCRATCH-FREE FINISHES

● Both of these Dremel *straight-line* action sanders are ruggedly constructed — ideal for student use — Model 2000 for any type woodworking assignment, including desk refinishing, general school maintenance — Model "A" for lighter projects. Each model has only 2 moving parts — requires no oiling or attention — uses 110-120 V., 60 cycle A.C. Model 2000 has 21 sq. in. sanding surface, weighs 5 lbs. Model "A" has 12 sq. in. sanding surface, weighs 2½ lbs. *Both are excellent polishers.* Dremel Sanders are precision tools widely used in schools, home workshops, and industry. Fully guaranteed. *If your dealer can't supply, order direct. Write for complete tool catalog.*

DREMEL MANUFACTURING CO. Dept. 312-A RACINE, WIS.



2 NEW sets of TOY PATTERNS 25¢ each

Practical, easy-to-make projects for shop beginners—particularly suited for elementary industrial arts students. They simplify project making, give students practice in using the basic woodworking tools and help them to build self-confidence.

Fun to make, simple to trace and cut out, these patterns make ideal Christmas gifts.

Illustrated covers give directions for finishing. Full-size patterns printed on heavy sheets include assembly data. Every instructor will want to add these 2 New Sets of Toy Patterns to his project file. Send for yours today.

THE TOOL BOX OF THE WORLD

STANLEY
Reg. U.S. Pat. Off.

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

SEND ME TOY PATTERNS

STANLEY TOOLS, Educational Dept.
104 Elm St., New Britain, Conn.
Enclosed is ..... Please send material checked.

☐ Set(s) Patterns P1. 25c each ☐ Set(s) Patterns P2. 25c each

Name.....

Subject you teach.....

School.....

City..... State.....

News Notes

♦ The industrial-arts department, Ball State Teachers College, has established two graduate fellowships for the school year 1951–52. The two individuals appointed are devoting their time to experimentation with a program of free-work periods. The individuals selected are Henry Gorzynski, who received his B.S. degree from Iowa State Teachers College, Cedar Falls, Iowa; and Richard T. Warner, who received his B.S. degree at the State Teachers College, Oswego, N. Y. Both men are working toward their master's degree at Ball State Teachers College.

Each year the Ball State Teachers College faculty of Muncie, Ind., elects two representatives for the North Central Association of Colleges for Teacher Education Workshop which is held at the University of Minnesota. For the summer workshop of 1951, Dr. Oliver C. Bumb was one of the representatives from Ball State Teachers College. To our knowledge, this is the first time that industrial arts has been represented at the workshop. Upon returning from the workshop Dr. Bumb reported to the faculty of the Ball State Teachers College at its pre-session meeting in September.

Dr. Fred J. Schmidt, Jr., head of Department of Industrial Arts, Ball State Teachers College, was one of four guest professors at the Bennett College, Bradley University, Peoria, Ill. The subject offered was "Industrial Arts for Elementary Grades."

♦ Positions paying from $6,600 to $12,000 per year are available for qualified persons in Burma, Thailand, Indonesia, Iran, and Syria. Specialists are needed in the fields of vocational agriculture; trade and industrial education; industrial arts; rural, elementary and adult education; educational methods and teacher training; engineering; and education of the illiterate.

Candidates who are college graduates with at least three year's teaching experience have the best chance for appointment. Contracts are for two years. Transportation is provided for the immediate family.

Interested persons should contact Dr. Paul E. Smith, Federal Security Agency, Office of Education, Washington 25, D. C.

♦ The name Kansas Vocational School was changed to Kansas Technical Institute on April 7, 1951. This institute is located in Topeka, Kans. G. Robert Cotton is its president.

♦ The Western Pine Association has just published a new 52-page book describing the character, uses, and grades for sugar pine, largest of all the pines.

It is the sixth in a series which has covered Idaho white pine, Ponderosa pine, Douglas fir, white fir, and larch, and appears exactly 125 years after the discovery of the sugar pine tree by botanist David Douglas on October 26, 1826. Since then sugar pine, a genuine white pine, has become famed among woodworkers and wood users for its remarkable workability, its beauty, and its durability.

The book outlines the physical properties of the wood, describes its many uses in construction and industry, and carries full-page pictures of typical grade examples together with descriptions of each piece. The book was designed as a permanent working tool for wood users.

Single copies are available without charge upon request to Western Pine Association, 510 Yeon Building, Portland 4, Ore.

♦ *Modern Ways in One- and Two-Teacher Schools.* By Effie G. Bathurst and Jane Franseth. Office of Education Bulletin 1951, No. 18. 48 pages. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 20 cents.

This bulletin describes practices in one- and two-teacher schools that are helping rural boys and girls get a good education. It tells how teachers help pupils to plan, select, organize, and appraise their experiences co-operatively.

This book, while addressed primarily to teachers, will also be useful to administrators, supervisors, and others who are looking for ways of helping teachers to improve their teaching.

♦ *A Directory of 2002 16MM Film Libraries.* By Seerley Reid and Anita Carpenter. Office of Education Bulletin 1951, No. 11. 113 pages. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 30 cents.

This directory is a state-by-state and city-by-city list of sources from which 16mm films can be borrowed or rented. It includes libraries which handle entertainment films and those which handle instructional films.

This directory will be helpful to teachers, school administrators, librarians, community leaders, and others who use or may wish to use motion pictures in their educational and informational programs.

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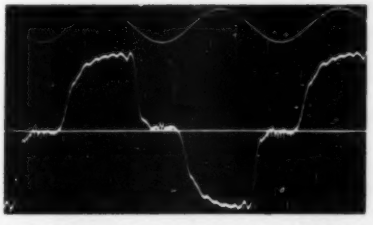


Typical oscillograph of exploring-coil voltage, normal excitation, full-load.

The exploring coil is isolated from the armature circuit electrically, but is subject to the same flux as the armature winding. Only one side of the exploring coil is in a conventional armature slot. The other side lies in a special groove in the armature shaft and this side of the coil is not in the flux path. In effect, the exploring coil gives a true indication of a single conductor cutting the flux of the machine.

Professor F. Wahler of the Polytechnic Institute of Brooklyn, N. Y. says:
"The spontaneous enthusiasm shown by students using this exploring-coil generator to study armature reaction, proves that it is a 'must' for all electrical machinery laboratories."

General Electric Company, Section 687-71
Schenectady 5, N. Y.

Please send me bulletin GEC-747 on the Exploring-Coil Generator.

☐ Planning an immediate project
☐ For reference only

Name_____
School_____
Address_____
City_____ Zone___ State_____

GENERAL ELECTRIC

NEWS NOTES

(Continued from previous page)

♦ Aluminum Company of America said recently that heavy rains in the Pacific Northwest have reduced production losses there by 73 per cent.

Water levels at hydroelectric sites have been restored to the point where ALCOA estimates its drought-caused aluminum production losses will be about 2.2 million pounds this year instead of the 8 million pounds originally anticipated.

Each pound of ALCOA aluminum produced there requires nearly 10 kilowatt-hours of electrical power.

♦ John F. Rider Publisher, Inc., 480 Canal St., New York 13, offers to the servicing trade a completely new data service — *Rider Tek-File*. Available to servicemen on a monthly basis. The *"Tek-File"* will be distributed through the organization's jobbers starting in late November.

The purpose of the *Tek-File* is to make available, monthly, the same factory-authorized, unabridged service data that appears in Rider manuals. This will enable the serviceman to have data almost immediately after the manufacturers release it. Each *Tek-File* contains a minimum of 128 pages, equivalent to 8½ by 11-in. size. Frequently, it is expected that the amount of pages will be much higher. For easy reference, each manufacturer's data will be stapled into an individual file folder and plainly marked for instant identification. *Tek-File* will depend on the volume of material. In all cases the servicing information will be complete.

A variety of selections of *Tek-File* will be available each month so that the serviceman may buy only the data he needs. Each *Tek-File* will contain a cumulative index for the entire series published.

Rider's Television Manual, Volume 8, which will be available in November, will be offered to the trade in the familiar Rider TV Manual format. Each durably boxed *Tek-File* is priced at $2.

♦ Bailey Films, Inc., 6509 DeLongpre Ave., Hollywood 28, Calif., announces a new film "Driver Training, Advanced Turning Movements," a high school driver educational film.

It is suggested for high school and adult classes in driver training, for police and auto-club safety work, and for use by museums, public libraries, and civic organizations.

The film is available in 16mm. sound black-and-white with a study guide.

♦ Three IPI contests are slated for this year.

Two of them are essay contests for young men and young women offering $1,190 in cash prizes.

The subject for the essays is "Color Printing in a Free World." The lengths of the essays must not be less than 300 words, and not more than 500 words.

The third contest, offering $500 in prizes, is a design competition limited to schools registered in the essay contests.

For information on these contests write to *Fred J. Hartman, educational director, International Graphic Arts Education Association, 412 National Savings and Trust Bldg., 719 Fifteenth St., N.W., Washington 5, D. C.*

♦ Men in civil life, either veterans or non-veterans with a degree in civil engineering, geology, or photogrammetric engineering, can now enter the air force directly as officers, with a topographic engineer commission. This announcement was made at First Air Force Headquarters at Mitchel Air Force Base, New York, by Major Charles D. Morat, Jr., Director of Military Personnel Procurement.

Inquiries should be addressed to the Department of Military Personnel Procurement, Headquarters First Air Force, Mitchel Air Force Base, New York.

♦ The Stout Institute has had a busy summer with an enrollment of more than 200 men graduate students out of a total student body of 507. This figure does not include the following workshops: work conference for T. & I. teachers — 31; driver training — 56; and 21st annual conference for homemaking instructors in Wisconsin Schools of Vocational and Adult Education — 140.

♦ Evening classes which will enable students who drop out of the day vocational high schools to earn a diploma through continued study were being considered by the board of education of New York City.

The new classes are to be opened on an experimental basis in three centers, the Brooklyn High School of Automotive Trades, the Central High School of Needle Trades, and Samuel Gompers Vocational High School.

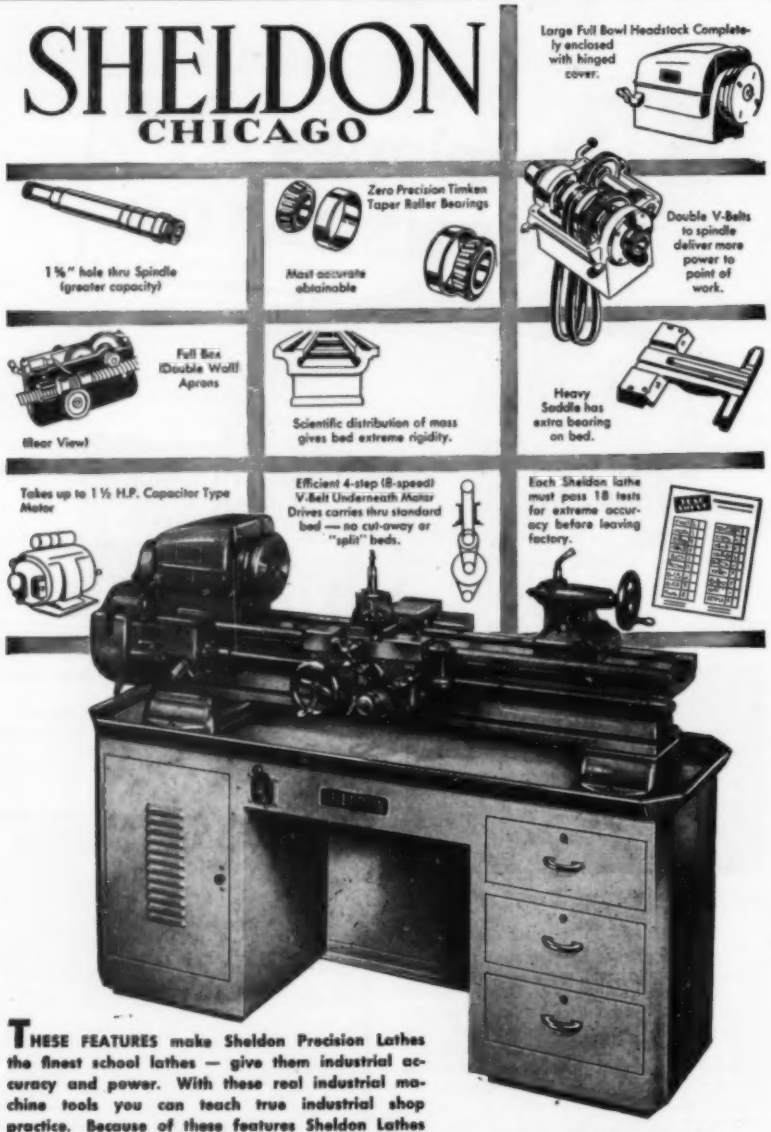
Only students who are 17 or over and who have successfully completed the sixth term of the regular day vocational high school course will be admitted to the evening classes. They must be recommended by the principal of the trade school they last attended.

♦ A new instructional film strip "How to Operate Your S.V.E. Instructor" is now standard equipment on all S.V.E. Instructor tri-purpose projectors.

The film strip is threaded into the projector as it receives its final inspection and is packed at the factory. A special tag attached to the

(Continued on page 22A)

SHELDON
CHICAGO


Large Full Bowl Headstock Completely enclosed with hinged cover.
1⅝" hole thru Spindle (greater capacity)
Zero Precision Timken Taper Roller Bearings
Most accurate obtainable
Double V-Belts to spindle deliver more power to point of work.
Full Box (Double Wall) Aprons
(Rear View)
Scientific distribution of mass gives bed extreme rigidity.
Heavy Saddle has extra bearing on bed.
Takes up to 1½ H.P. Capacitor Type Motor
Efficient 4-step (8-speed) V-Belt Underneath Motor Drives carries thru standard bed — no cut-away or "split" beds.
Each Sheldon lathe must pass 18 tests for extreme accuracy before leaving factory.

THESE FEATURES make Sheldon Precision Lathes the finest school lathes — give them industrial accuracy and power. With these real industrial machine tools you can teach true industrial shop practice. Because of these features Sheldon Lathes withstand "student abuse" and hold their accuracy without constant bearing maintenance. With fully enclosed headstocks and available with lever-operated speed-changes. They are safe for students to operate.

Write for Bulletin describing the new "C" Series Lathes designed for schools where space or budgets are restricted.

SHELDON MACHINE CO., Inc. 4244 N. Knox Avenue CHICAGO 41, U. S. A.

They get the idea...

and get it *fast* with sound movies

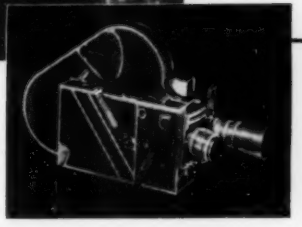
The Pageant Projector multiplies teaching effectiveness

These school children are sharing a new experience . . . watching on film how people actually live in a far-off foreign country. Children learn better and teaching is easier when you use movies . . . whether black-and-white or color, silent or sound.

And you will find the 16mm. Kodascope Pageant Sound Projector your best friend when using movies in your daily curriculum. A limited film library need not hamper you, because thousands of "ready-made" films on almost any subject you can name are available from hundreds of widely located rental libraries today.

You will also find the Pageant Projector easy to operate . . . simple to thread and set up for classroom use. Any sixth or seventh grader can handle the presentation for you. Dependable performance means trouble-free presentations. The optical system always projects the sharpest and clearest of pictures and a unique sound system has controlled tone volume for best of fidelity. Pupils are more sure to hear and understand the narration clearly whether from sound tracks or from the microphone or phonograph attachment used with silent films.

Lifetime lubrication means no more oiling problems, makes your film prints last longer. The Pageant and speaker, in a single, portable case, weigh only 33 lbs. List price is $400. Let your Kodak Audio-Visual dealer demonstrate it for you, or send for a new booklet which describes its uses in full.



A motion-picture camera for any assignment

With the 16mm. Cine-Kodak Special II Camera, you can make your own movies—top-quality films for teaching, demonstrating, or research. It gives you professional results . . . with all the controls needed for fades, mask shots, dissolves, multiple exposures, and animations. Write for "16mm. Motion Picture Making with the Cine-Kodak Special II."

Price is subject to change without notice.

MOTION PICTURES

. . . teach, train, entertain

EASTMAN KODAK COMPANY, Rochester 4, N. Y. 193

Please send booklets: ☐ *Kodascope Pageant Sound Projector*
☐ *16mm. Motion Picture Making with the Cine-Kodak Special II*

NAME_____

COMPANY_____

STREET_____

CITY_____ (ZONE) STATE_____

Kodak

NEWS NOTES

(Continued from page 20A)

projector calls attention to the strip and gives three simple steps on starting the projector, focusing and advancing the film strip. "How to Operate Your S.V.E. Instructor" was designed to make it possible for anyone to operate an Instructor model in a professional manner — even though they have never used a film strip projector before. Every step of the way is clearly illustrated and explained in "nontechnical" terms in order to instill confidence in the operator.

In addition to becoming a standard equipment feature, this Instructor film strip is being made available through S.V.E. dealers to present owners of Instructor models and schools and churches with established audio-visual instructional courses.

For further information write to the *Society for Visual Education, Inc., 1345 West Diversey Parkway, Chicago 14, Ill.*

An *Introduction to Karat Golds* for hand craftsmen has just been published by the Craft Service Department of Handy and Harman, refiners and fabricators of precious metals. It is available by writing to Craft Service Department, *Handy and Harman, 82 Fulton St., New York 38, N. Y.*

♦ A special sample mold service for foundries interested in the revolutionary resin-sand shell-molding process has been announced by Monsanto Chemical Company's Plastics' Division, Springfield, Mass.

The new service provides foundries with an opportunity to obtain a sample mold made from shells of Resinox phenolic resins and sand on patterns sent in to Monsanto. The program is designed to enable foundry personnel to carry on experimental casting operations using the shell-molding process without investing in new equipment.

♦ A new *school-scoring* edition of the Iowa Tests of Educational Development has been announced.

This self-scoring edition has been made available to meet the demand from educators who requested the ITED in an edition they could score themselves — and purchase to fit specific needs. Test booklets are available singly, grouped by scholastic areas, or as a complete battery. There are carbon self-scoring answer pads, as well as answer sheets for machine-scoring.

Further information is available from the *Iowa Programs Editor, Science Research Associates, 57 West Grand Avenue, Chicago 10, Ill.*

♦ A scientific method of testing applicants for apprenticeship and how the method was determined is revealed in this study, reprinted from *Plumbing and Heating Business,* and made available by the U. S. Department of Labor, Bureau of Apprenticeship. The pretesting procedure proposed is based on tests of 256 plumbing apprentices compiled by instructors in 22 Wisconsin schools. The tests, which are charted, measure mechanical aptitude, manual dexterity, mental ability, personality adjustment, and interest in occupational fields.

Copies of this reprint may be obtained free of charge by writing to the *Bureau of Apprenticeship, U. S. Department of Labor, Washington 25, D. C.* When requesting copies please mention the name of the publication and the date of the issue in which this announcement appeared.

♦ A revised 24-page motion-picture catalogue, describing 18 sound motion pictures for schools, has been announced by the School Service Department of the Westinghouse Electric Corporation.

The films described in the catalogue are loaned free except for transportation costs and have been chosen for their suitability for schoolroom use. They cover subjects in the fields of science, home economics, industrial arts, social science, agriculture, and salesmanship. Many are recommended for general assembly. The catalogue also describes supplementary material available as teaching aids for use with the films.

Teachers can obtain copies of the revised catalogue (B-5409) by writing to the *School Service Department, Westinghouse Electric Corp., 306 Fourth Avenue, Box 1017, Pittsburgh 30, Pa.*

♦ A special research report has been issued by the University of Illinois Small Homes Council on "Split-Level Houses Designed for Solid-Fuel Heat."

By separating the home into a ground-floor living level, a raised sleeping level, and a depressed utility level, advantages of both the one-story and the two-story house are obtained. Yet there is only a half flight of stairs from the living area to either of the other parts of the house.

The booklet presents several standard section plans for the living, sleeping, and utility levels. These are combined in 14 suggested house plans, and any number of further plans can be developed from them.

The booklet is 50 cents from the *Small Homes Council, Urbana, Ill.*

(Continued on page 24A)

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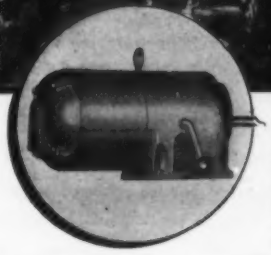

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NEWS NOTES

(Continued from page 22A)

♦ American veterans, disabled in military service anywhere in the world after fighting started in Korea, are now eligible under a new law for vocational training on the same basis as World War II veterans.

The new Act, known as Public Law 170, 82nd Congress, lifts the bar by eliminating the "armed conflict" and "extrahazardous" requirements.

Under the law, training may be extended to those veterans, disabled in any part of the world after June 27, 1950, who meet essentially the same requirements as their fellow veterans of World War II: a discharge under other-than-dishonorable conditions; a compensable service-connected disability; and a need for training to overcome the handicap of the disability.

Questions and Answers

SCHOOL-SHOP PLANNING

1150. Q.: I am doing a study on the planning, organizing, and providing of equipment for an industrial-arts general shop. Perhaps you could give me information on sources of information which would be of use in this study.

A.: I would refer you to the following list of articles,* all of which have appeared in past issues of INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. These articles deal with the subject of school shop planning:

"Shop Layout," Horace M. Jellison — May, 1951, p. 186.

"Shop Units Can be Attractive," Robert T. Elliott — May, 1951, p. 187.

"School Shop Planning With Three Dimensional Models," John Austin Woolley — Oct., 1951, p. 310.

"Planning the Comprehensive General Shop," Welcome E. Wright — March, 1951, p. 88.

"The Wausau School of Vocational and Adult Education," Lawrence B. Hoyt — March, 1950, p. 89.

"Practical Shop Layouts for Areas and Work Stations," George A. Willoughby — March, 1949, p. 88.

"Planning School Shops," Thomas A. Hippaka — March, 1949, p. 91.

"Course in School Shop Planning," DeWitt Hunt — March, 1949, p. 98.

"Check List for School-Shop Planning," Herschel F. Eastman — March, 1948, p. 126.

"Laying Out the One-Teacher Industrial-Arts Department," H. H. London — March, 1948, p. 81.

"High School Shop Layout," Carlin Aden — March, 1947, p. 97.

"How to Make a School Shop Layout," Ammon Swope — April, 1947, p. 141.

"Planning the Industrial Arts Shop," Louis Newkirk and Wiley Klingensmith — Nov., 1947, p. 374.

"Shop Planning for the Small High School," Sylvan A. Yager and Fred J. Schmidt, Jr. — March, 1947, p. 87.

"A Plan for the Small General Shop," Chris H. Groneman — March, 1947, p. 92.

"Combination Planning and Work Stations for Industrial Arts," G. Harold Silvius — March, 1945, p. 10.

"Practical Factors in the Design of All Day Trade Schools," H. W. Paine — March, 1946, p. 89.

"Planning the Arts Department in the Secondary School," Chester F. Miller — June, 1942, p. 238.

"Development, Use, and Evaluation of an Arts Workshop," Fred J. Schmidt, Jr. — March, 1942, p. 119.

"Principles of Industrial-Arts Equipment Selection," Elroy W. Bollinger — March, 1942, p. 128.

"Floor Areas and Equipment in Small High School," Duane Chamberlain — March, 1942, p. 130.

"Rural High School Shop and Classroom," L. M. Roehl — March, 1941, p. 103.

"The Crusade for Color," John Sharpe Warren — March, 1945, p. 111.

"Seeing in the Schoolhouse," Wm. G. Darley — March, 1946, p. 99; April, 1946, p. 154.

"Contrast Color Painting for Shop Safety," Paul G. Hausman — March, 1946, p. 115.

"Color in the School Shop," Joseph C. Thompson — March, 1947, p. 98.

— J. J. M.

*Probably readers can look up this material in the library of their school superintendents, or in the high school library, where back copies of our magazine may be kept. We cannot supply copies of these articles because most of this material is out of print. — *Ed.*

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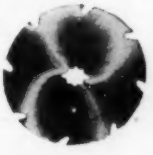

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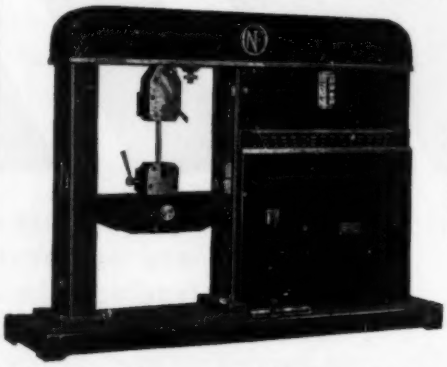

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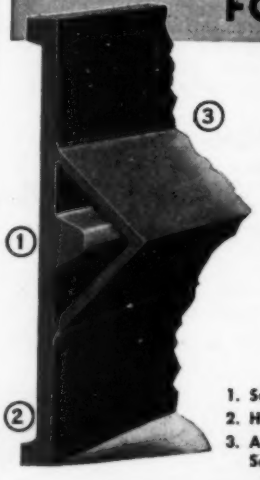

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3/4	5	1.57	1-11/64	7½	3.95
49/64	4¼	1.64	1-3/16	7½	3.95
13/16	4	1.82	1-7/32	8½	4.14
13/16	22	8.00	1-15/64	7½	4.51
55/64	5½	2.02	1-21/64	5½	5.38
7/8	4¼	2.02	1-11/32	9½	5.38
57/64	5¼	2.12	1-15/32	8	6.13
15/16	5¼	2.30	1-17/32	7	7.16
15/16	9¾	4.00	1-11/16	12	9.13
61/64	4-1/7	2.42	1¾	5	6.00
31/32	4¾	2.42	2-9/16	6½	15.00
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21/64	.50	15/32	.73
11/32	.50	31/64	.75
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41/64	1.43	31/32	2.50
21/32	1.43	1-1/32	2.80
43/64	1.58	1-1/16	3.05
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4" x ½" x ½" arbor Norton 130-grit wheel	88c ea.
8" x ½" x ½" arbor cut-off wheel	70c ea.
8" x ½" x ⅝" arbor A 303-8-87 wheel	80c ea.
8" x ½" x ⅝" arbor Aluminum oxide resinoid 1-20A7S wheel	75c ea.
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New Publications

The Activity Period in Public High Schools

By Ellsworth Tompkins. Statistical tables prepared by Robert C. Story. Office of Education Bulletin 1951, No. 19. 17 pp., 15 cents. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

This publication reports practices regarding activity period organization in public high schools. The data will be helpful to all those interested in the problem of how best to organize effective pupil activity programs in meeting the needs and interests of all secondary school youth.

Offerings and Enrollments in High School Subjects

Paper, 118 pp., 5 13/16 by 6⅛ in., 30 cents. Obtainable from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

This is the tenth survey by the Office of Education, and covers the years 1948–49.

Under the heading "Industrial Arts — Nonvocational" they state that 25 per cent of all pupils in all types of schools are enrolled in this subject.

The report states further that industrial arts is found more than twice as often as in the other two types of schools. As the enrollments in industrial arts are not reported separately for grades 7 and 8, no comparisons can be made with the enrollments in the last four secondary school grades.

The report further shows that the largest enrollments are found in general shop, woodworking, and mechanical drawing. Metalwork is next and then comes printing.

The survey presents interesting information also under the heading "Grade and Industrial Education — Vocational."

It is the first time that statistics of this kind have been collected on industrial-arts courses and enrollments on a state and national basis.

Better Grinding

Spiral bound booklet, 84 pp., 6 by 9 in. Landis Tool Co., Waynesboro, Pa.

This book contains many valuable tips on: how to set up grinding jobs; how to operate precision cylindrical grinders; how to take proper care of cylindrical grinders; how to turn out better grinding jobs.

There are 17 chapters devoted to basic grinding facts as they pertain to cylindrical grinders. Over 90 practical illustrations dramatize grinding operations.

This publication has been prepared to help train the thousands of new machine operators who have entered industry to assist in the defense program. Teachers may obtain a copy of this book by writing to the firm at the above address.

General Electricity Shop Work Manual

Spiral bound book, 115 pp., 8¾ by 11 in.

This useful manual is the work of a committee of industrial-arts teachers of the public schools in New York City. It is intended for seventh-, eighth-, and ninth-grade students.

When properly used this workbook should be very helpful to teachers in presenting the subject they are teaching.

Modern Auto Body and Fender Repair

By John W. Vale, Jr. Cloth, 279 pp., 6⅞ by 9¼ in., illus., $3.75. Prentice-Hall, Inc., Publishers, 70 Fifth Ave., New York 11, N. Y.

This book contains step-by-step explanations and instructions on how body and fender repairs can be made. Pictures of the typical hand forming sheet-metal tools are shown, and welding and soldering practices are explained and illustrated.

The Popular Mechanics Guide to Home Repairs

Cloth, 192 pp., 6⅝ by 9½ in., illus. Popular Mechanics Press, 200 East Ontario St., Chicago 11, Ill.

Home repair problems frequently are very troublesome. This book contains explicit directions for solving many of them.

The book covers attic remodeling, brick wall painting and joint calking, built-in cabinets, fixing faucets and toilets, lock repairing and key filing, installing and patching linoleum, floor maintenance, interior and exterior painting and wall papering, and many other jobs that plague the homeowner are clearly explained. The book is well illustrated and the directions are easily understood.

Rider's Television Manual, Volume 8

Rider's Television Manual, Volume 8 is the largest Rider television manual to date. Volume 8 is scheduled for publication in November, at which time the distributors of John F. Rider, Publisher, Inc., 480 Canal St., New York 13, will receive their stock of the 2684-page (8½ by 11 in.) manual. Price $24.00.

(Continued on page 34A)

SHOP EQUIPMENT NEWS

A NEW PACKET OF PLANS BY STANLEY

Stanley Tools, Division of the Stanley Works, have just issued a new Series C Packet to accompany their Series A & B Early American Designs.

The plans which make up this packet present 15 additional Stanley Plans. The projects are interesting, pleasing, and quite easy to make. The series consists of a jewel box with tray; a smoker's wall rack, a miniature shoeing stand, a Colonial wash stand, a bedside stand, and cabinet; a miniature dresser chest; a paper towel holder, a miniature hutch table; corner shelves; a miniature cobbler's bench; spoon rack and drawer; miniature dower chest; Dutch corner shelves; a Colonial foot stool; and a plate and spoon rack.

The cost of this packet consisting of 8½ by 11-in. project sheets, is 25 cents.

For further information write to *Stanley Tools, Home Workshop Dept., New Britain, Conn.*

For brief reference use IAVE — 0101.

NEW BENCHMASTER ARBOR PRESSES

Benchmaster's punch presses and milling machines have now been augmented by a line of specially developed arbor presses, offering the user increased work capacity, both in throat depth and in vertical space. At present they are furnished in three sizes — Nos. 0, 1, and 2, and in standard and solid platen types with choice of lever or pilot wheel actuation.

A real effort has been made to make every pound of metal function to advantage, to equalize stresses uniformly over the entire casting, and to avoid any area of weakness. To compensate for the additional bending movement, the column gradually increases in size and width as it approaches the base. It is smoothly filleted at the point of connection. Beneath the base are two heavy webs. The base and column are integrally cast of high-strength semisteel which, in combination with the design, is so effective that safety factors at least five times rated capacity are obtained.

The steel rams and pinions are cut with stub gear teeth capable of withstanding intense loads. Take-up adjustments are featured on both front and side of ram, insuring a line of straight travel as well as wear compensation adjustments.

New literature describing Benchmaster Arbor Press construction, specifications, and prices are available from *Benchmaster Manufacturing Co., 1835 W. Rosecrans Ave., Gardena, Calif.*

For brief reference use IAVE — 0102.

THE DELTA SHOP PLANNING CONTEST

The Delta Power Tool Division of the Rockwell Mfg. Co., Milwaukee, Wis., has just announced a contest for the best school shop layout under the title-theme "School Shops for Today and Tomorrow."

The prizes are offered in six school divisions: (*a*) school shops for the seventh and eighth grades; (*b*) for ninth to twelfth grades; (*c*) for the junior high school — seventh, eighth, and ninth grades; (*d*) for technical high schools, trade schools, and part-time, full-time, and adult education schools.

The prizes offered are truly enticing. There are thirty honor awards, five in each classification. For the best school shop layout, $1,000 worth of Delta tools may be chosen by the winner. Then there are six division prizes — the best school shop layout in each of the afore-mentioned divisions, $350 worth of Delta tools. Besides these, there are thirty honor awards — five in each classification.

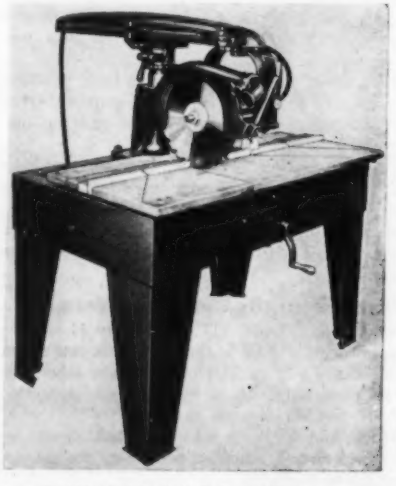
For further information write to *Delta Power Tool Division, Rockwell Mfg. Co., 715 M E. Vienna Ave., Milwaukee 1, Wis.*

For brief reference use IAVE — 0103.

DE WALT MODEL R-2 RADIAL SAW

DeWalt, Inc., manufacturer of cutting machines for the woodworking, metal, and plastics industries, has introduced a new radial receding arm saw that is called the DeWalt R-2.

The motor used on this saw is the DeWalt-manufactured, low, dead-rise, direct-drive motor which permits a depth of cut that is about 40 per cent greater than that possible with conventionally designed direct-drive motors. This motor is wound with Formex Fiberglas insulation, and provided with grease-sealed-for-life bearings that require no lubrication.



DeWalt Model R-2 radial saw

The arm of the DeWalt Model R-2 rides smoothly on eight grease-packed, double-row bearings. Locating latches permit the rapid location of the cutting tool in any of the many cutting positions. DeWalt Model R-2 motors are equipped with a thermal overload and manual push button starting switch. The machine is available in 3- and 5-h.p. sizes, and the recommended saw blade sizes are: 12 in. for the smaller models, and 14 in. for the larger models.

For additional information on these saws write to *DeWalt, Inc., Dept. P-113, Lancaster, Pa.*

For brief reference use IAVE — 0104.

NEW SOUND MOVIE, "CAMERAS GO TO CAMP"

A new 16mm. sound and color movie, "Cameras Go to Camp," is now available for distribution. Running time for this movie is about 14 minutes.

It shows how cameras fit into camp life, how they can be used to help build friendships as well as a pictorial record of events around camp, and how photography can be used by counselors and camp directors as a regular part of the camp program.

To supplement the film, Kodak is also offering camp counselors and camp directors a manual on teaching photography at the camp level. This manual, "Photography in Camp," is available without charge.

The film is offered to schools, Boy and Girl Scout groups, service clubs, PTA associations, and community club groups without charge. Bookings for the use of the film may be made by writing directly to W. B. Brummitt, Department 8, *Eastman Kodak Co., Rochester 4, N. Y.*

For brief reference use IAVE — 0105.

KNIGHT "SKY-ROVER" 3-WAY PORTABLE KIT

Allied Radio Corporation of Chicago announces a new 3-Way Portable Radio in kit form. It's the "Sky-Rover," compact receiver that covers the full standard broadcast band, 535–1650 kilocycles. Any kit-builder who has a soldering iron, screw driver and pliers can wire and assemble this kit. An 8-page instruction manual includes both schematic and picture type diagrams that present every construction detail clearly. The completed unit operates equally well on 105–125 volts d.c., 60-cycle a.c., or batteries.

For further information write to *Allied Radio Corporation, 833 W. Jackson Blvd., Chicago 7, Ill.*

For brief reference use IAVE — 0106.

WESTINGHOUSE TEACHING AIDS

The Westinghouse Electric Corporation has just issued their 1951–52 booklet B-5408 on teaching aids.

It contains lists of aids in science, social studies, agriculture, home economics, industrial arts, and photography.

Auto-visual aids, lighting the school plant, and information on the Westinghouse science talent search, and Westinghouse scholarships also are described.

(Continued on page 30A)

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in your school shop means

A complete line of Hardwood and Softwood Lumber and Plywood

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Ball Bat Blanks	Sample Sets
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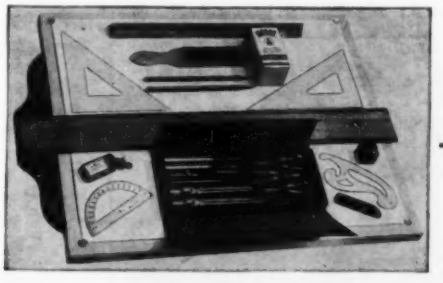

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For precision student work make WEBER – COSMOS DRAWING INSTRUMENTS (Original Round System) the heart of your equipment. Use WEBER – COSMOS INSTRUMENTS with the other Weber drawing necessities, including T Squares, Triangles, Curves, Scales, Slide Rules, Drawing Boards, and Waterproof Drawing Inks for top performance at school budget prices.

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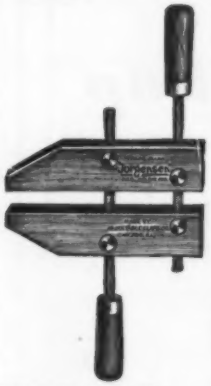

Genuine "JORGENSEN" Handscrews have long been preferred by careful buyers for the school shop. They will stand up under school shop use.

Jaws are clear, straight grain hard maple, properly seasoned and manufactured in our own shop. Cold-drawn steel spindles. Hard maple handles that will not come loose. All parts carefully fitted for smooth, trouble-free operation.

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"PONY" Clamp Fixtures make ideal bar clamps on any length ¾" or ½" black pipe, and will be found to be one of the handiest tools in the shop! Insist on "PONY."

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Handscrews, Steel Bar Clamps, Clamp Fixtures, "C" Clamps, Lathe Dogs, etc., are available thru your favorite tool supplier—cost no more than ordinary clamps.

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ELECTRIC PORTABLE OVEN

For preheating Methyl Methacrylate in sheet or rod form where it is necessary to maintain even temperature throughout the sheet, especially desirable in compressed air, vacuum or pressure forming techniques.

No. 600

The Oven is controlled by a newly developed thermostatic control, sealed in and conveniently placed on the front panel, of the Oven. It can accurately be set at any desired temperature where a quick rate of heat up to 306° F. is desired.

Due to the Aluminum Construction, the Oven is very light in weight and can be carried from room or project to project. As it operates on 110 volt AC or DC, it can be plugged into any 110 volt receptacle.

SPECIFICATIONS

Model	Interior Size	Wattage 110 AC-DC	F.O.B. Phila. Price
600	12"Wx12"Dx12"H	700	$ 75.00
602	24"Wx12"Dx12"H	1400	125.00

THE ELECTRIC Hotpack COMPANY, INC.

5067 Cottman Ave. Philadelphia 35, Pa.

SHOP EQUIPMENT NEWS

(Continued from page 28A)

Write for a copy of this booklet to *Westinghouse Electric Corp., 306 Fourth Ave., P.O. Box 1017, Pittsburgh 30, Pa.*

For brief reference use IAVE — 0107.

NEW RECIPROCATING AIR SANDER

A new pneumatic reciprocating sander is announced by the Detroit Surfacing Machine Company.

Detroit reciprocating sander

The new model operates with the same straight-line, reciprocating action that has always been featured in all model Easy sanders. The company claims this action is highly desirable on many types of work as it permits sanding up to right angles without leaving abrasive patterns. The unit weighs less than 6 lb. A well-designed grip provides for comfortable one-hand operation. There is also a front handle for overhead and other awkward applications. Efficient operating speed is maintained with air pressure of 70 lb.

It takes ⅓ of a standard 9 by 11-in. sheet of abrasive paper and has a new type of abrasive holder, insuring ease in attaching even the coarsest abrasive grits No. 1½ (40) paper or cloth back.

For descriptive literature, write the *Detroit Surfacing Machine Co., 1333 East Eight Mile Road, Detroit 20, Mich.*

For brief reference use IAVE — 0108.

SOUTH BEND LATHE'S PYGMY CATALOGUES

Despite their postage-stamp size, two new catalogues by South Bend Lathe Co. illustrate and describe practically their entire line of precision lathes, drill presses, shapers, attachments, and accessories. Only 2½ by 1⅝ in., each of these little accordion-folded booklets contains 28 pages with clear-cut illustrations and highly legible (though small) type matter describing all important products of the company.

If you want a copy of these jack-in-the-box accordion-folded bits of literature, write for catalogues 5104 and 5119, to *South Bend Lathe Co., South Bend 22, Ind.*

For brief reference use IAVE — 0109.

SOFT TEXTURE LUMBER

Brodhead Garrett Company have issued an interesting booklet which they entitled "Soft Texture Lumber." This does not mean, however, that the descriptions in the book are confined to soft woods, because there are many soft-

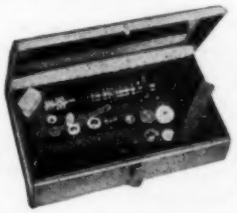
(Continued on page 32A)

A Toolshop in Your Hand

HANDEE *tool of 1001 Uses*

HANDEE is a basic "must" for every industrial arts class. It's the tool for really smooth, controlled power ...works in metal, wood, glass, bone, leather, etc. Internal carving in plastics. Grind, drill, carve, saw; other uses, too. Easy to instruct...easy to operate... students take to HANDEE readily! More HANDEE tools are in use today than all others combined!

First Tool of Its Kind TODAY'S FINEST



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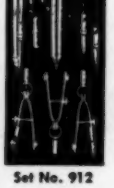

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By John L. Feirer. Covers all phases of general metal work and includes related information and suggested projects. Numerous illustrations. Each of the 62 units deals with a basic operation, giving instruction and information on equipment, tools, materials, and occupational opportunities.

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By Chris H. Groneman. Presents basic information and material on practical hand tool processes and the more widely used school power machines, related information and suggested projects. Step-by-step approach. Over-the-shoulder illustrations.

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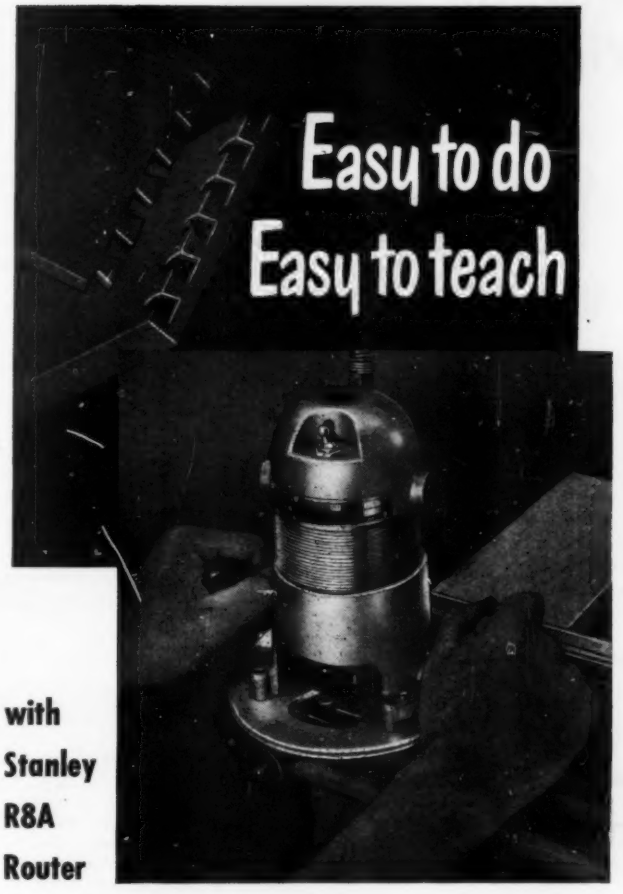

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Student woodworkers make intricate dovetail cuts —perfectly—with these Stanley tools. There's no special skill required.

Dovetail Attachment holds work securely, while R8A Router cuts both side and front of the corner dovetail joint at the same time. *It's fast, easy, and practically foolproof!*

Powerful ½ H.P. motor drives R8A Router cutter at 20,000 r.p.m. Depth-of-cut adjustable to an accuracy of 1/64″. Dovetail attachments available in two finger sizes and either 12″ or 16″ lengths.

Ask about these tools at your tool dealer's. For catalog showing the complete line of Stanley Electric Tools, send coupon below.

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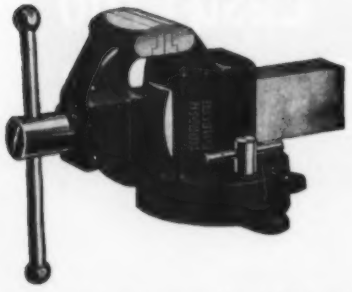

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SHOP EQUIPMENT NEWS

(Continued from page 30A)

textured hardwoods, too, and both softwoods and hardwoods are described.

The soft-textured lumber embraces ash, balsa, basswood, birch, cedar, cherry, cypress, Honduras mahogany, maple, oak, Philippine mahogany, pine, poplar, walnut, and willow.

Each kind of wood mentioned in the foregoing list is described as to its properties, and price per 100 bd. ft.

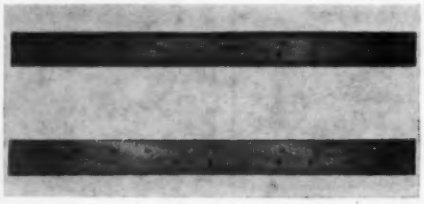
The book is well illustrated and at least one copy should be found in every school woodworking shop.

For further information write to *Brodhead-Garrett Co., 4560 East 71st St., Cleveland 5, Ohio.*

For brief reference use IAVE – 0110.

NEW STARRETT STEEL SHRINK RULES

The L. S. Starrett Company has added two new numbers of patternmaker's shrinkage rules, No. 366, 13/32 in. shrink per foot; No. 367, 13/32 in. per foot. Both are available in 12- and 24-in. lengths.



New Starrett shrink rules
No. 366 and 367

The rules are made of spring tempered steel, ground and machine divided with clear cut, easy to read No. 4 graduations (8ths, 16ths, 32nds, and 64ths shrinkage inch). The 12-in. rules are 1 in. wide by 3/64 in. thick. The 24-in. rules, 1¼ in. wide by 3/64 in. thick.

Shrink rules are available in shrinkages from 1/12 in. per foot up to 7/16 in. per foot; also in metric graduations.

For further information write to *The L. S. Starrett Co., Athol, Mass.*

For brief reference use IAVE – 0111.

CASTELL LOCKTITE NO. 9600 PENCIL HOLDER

A. W. Faber-Castell Pencil Company announces Castell Locktite No. 9600 holder, with a specially imported Castell No. 9400 flat, very thin drawing lead.

This combination is said to permit the drawing of continuous straight lines of positive uniformity. No sanding or sharpening is ever required. Held firmly in patented internal sections, the imported Castell lead is .017/.018 in. thick, .096/.098 in. wide, and 4 in. long. It is available in degrees HB, F, H, 2H, 3H, 4H, 5H, 6H, 7H, 8H, and 9H.

Locktite 9600 is finding wide uses in drafting rooms, especially for lofting work and all types of designing and drafting where straight line drawing is the major part of a day's work.

For further information address *A. W. Faber-Castell Pencil Co., Newark, N. J.*

For brief reference use IAVE – 0112.

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Grinding can be done on a come, coarse or fine or emery leather stropping or emery wheels. Unit is compact, efficient, serviceable, easily accessible and has ball bearing direct motor drive. Especially guarded for school shop use. Details on request.

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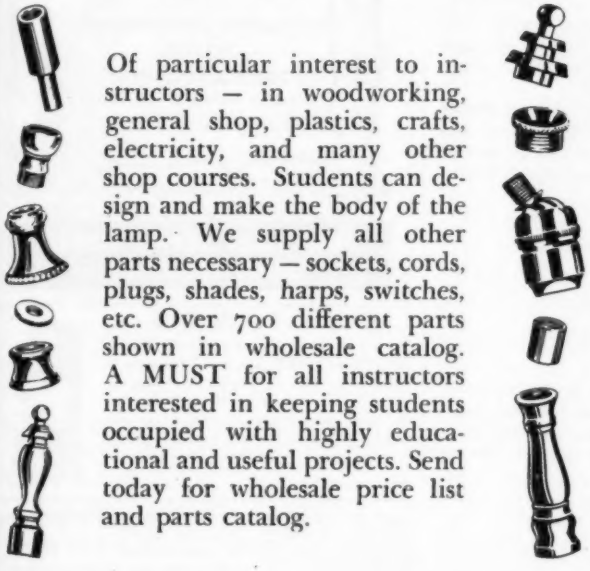

Of particular interest to instructors — in woodworking, general shop, plastics, crafts, electricity, and many other shop courses. Students can design and make the body of the lamp. We supply all other parts necessary — sockets, cords, plugs, shades, harps, switches, etc. Over 700 different parts shown in wholesale catalog. A MUST for all instructors interested in keeping students occupied with highly educational and useful projects. Send today for wholesale price list and parts catalog.

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BY ELMA & W. H. WALTNER. A practical presentation of techniques of wood carving, devoted mainly to animal caricatures. Contains 23 interesting objects with specific instruction for carving and finishing each, $1.50.

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  BY DEAN. An advanced manual on leatherwork covering special techniques, production tricks, designing, etc. $5.00
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  BY DEAN. Full sized patterns for projects taken from Leathercraft Techniques & Designs. $2.00

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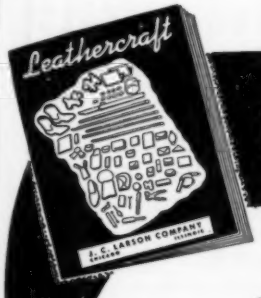

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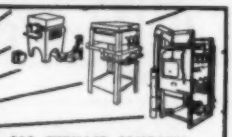

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(Continued from page 27A)

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Successful Poultry Management

By Morley A. Jull. Cloth, 447 pp., 6¼ by 9¼ in., illus., $3.60. McGraw-Hill Book Co., New York, N. Y.

This is the second edition of this text which presents the student of poultry raising a very comprehensive picture of what he should know about selecting, breeding, feeding, hatching, housing, maintaining healthy flocks, and marketing his product, whether that be eggs or live or dressed poultry.

Nutrition for Health

By Holger Frederick Kilander. Cloth, 415 pp., 5¾ by 8⅝ in., illus., $3. McGraw-Hill Book Co., New York, N. Y.

An interesting text on what and how much a person should eat. It contains numerous tables including master food plans at low and moderate costs. There are also problems for the student to be solved.

The stories about false beliefs about food contained in the book are very interesting.

Culloden Improves Its Curriculum

By Effie G. Bathurst and Lucille McGraw Richmond. Office of Education Bulletin 1951, No. 2. 24 pp., 15 cents. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

In the elementary school at Culloden, W. Va., a group of teachers, their principal, and their supervisor recently turned a formal and unsatisfactory school program into one that more adequately met the home and community needs of the boys and girls.

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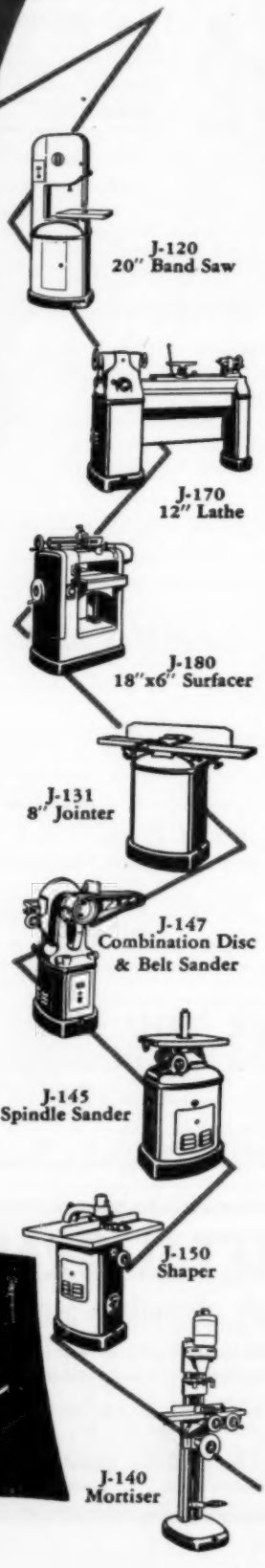

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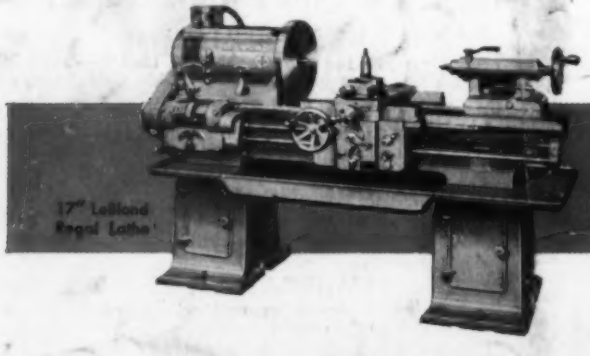

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